

FIGURE 5

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EDITORIAL NOTE.

It is regretted that this issue has been published much later than was expected. This has been due mainly to the Director's overseas visits. It was also partly due to holding up publication in order to include two papers that had been returned to the authors with suggestions for slight amendments by the referee. Despite repeated promises these papers were not returned although the authors knew that we had held publication so that the papers could be included.

We aim to produce the next issue more promptly and hope to be able to distribute No. 10 during 1982.

1982 April

OUTBURSTS OF SOME SOUTHERN DWARF NOVAE -----PAPER 1.

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SUMMARY: Several Tables list the observed outbursts of the southern dwarf novae AH Eri; TU Men; AQ Eri; CW Mon; BV Pup; BX Pup and BB Vel. The results are discussed and it is shown that TU Men is the most important of these systems.

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INTRODUCTION:

This paper is the first of a series that will bring published results up to 1981 December 31. The papers are a direct outcome of the stimulating discussions at the 1981 Santa Cruz Workshop on cataclysmic variables and related objects. The purpose of the papers in this series is firstly to present data on the observed outbursts of each dwarf nova under observation with a general discussion of the results. Secondly, the detailed observations will either be published in lists or as light curves in separate papers. Finally the combined results will be discussed with various tables and graphs making inter comparison between the different systems easier.

All observations have been made visually by members of the Variable Star Section, Royal Astronomical Society of New Zealand. The intervals during which the stars have been under observation differs from one star to another in accordance with the times at which they were placed on the observing list. For the stars discussed in this paper the detailed observations appear in Paper 2 in the present publication. Observed outbursts are listed in separate tables for each star. The first column in these tables assigns a running number to each outburst. This is followed by the J.D. of maximum; maximum magnitude; the interval, in days, between maxima, irrespective of whether they are consecutive or not. The final three columns give respectively the width of each maximum, in days, being the interval for which the star was visible; the type of maxima and the number of observations used to determine the other parameters.

The symbols used for types of maxima are:

S = Supermaximum.

W = Wide maxima with widths of 5 days or longer that cannot be termed supermaxima.

N = Normal, or short, maxima with durations of less than 5 days.

A = Anomalous maxima in which the rise to maximum brightness takes several days instead of the usual 24 hours or less.

1. AH ERIDANI.

The observations cover the interval J.D. 2,443,509 (1977 December 31) to J.D. 2,444,970 (1981 December 31). The observing season is from August through April with a few observations in July.

TABLE 1.
OBSERVED OUTBURSTS OF AH ERIDANI.

<u>No.</u>	<u>J.D. MAX</u>	<u>MAX.</u> <u>m_v</u>	<u>INT.</u> <u>d</u>	<u>WIDTH</u> <u>d</u>	<u>TYPE</u>	<u>No. OBS.</u>
1	2443,519	13.8		3	N	6
2	573	13.6	(54)	?	?	1
3	737?	14.5?	(164)	?	?	1
4	832	13.7	(95)	2?	N?	2
5	848	13.5	16	2?	N?	2
6	952	13.2	(104)	6	W	8
7	2444,076	13.5	(124)	3	N	5
8	088	13.7	12	2?	N?	2
9	168	13.8?	(80)	2	N	1
10	215	13.5	(47)	3	N	3
11	255	13.9	(40)	2	N	3
12	314	13.7	(59)	1	N	1
13	956	13.8	(642)	2	N	3

Notes

No.3 Possibly the single observation was the start of an outburst. Gap in observations of 8 days.

No.6.Slow rise of 3 days; outburst may possibly be anomalous.

No. 9Gap of 6 days before first observation of outburst.

DISCUSSION.

The reliable values in Table 1 give a mean maximum magnitude of 13.63_v. This is only slightly brighter than the threshold of most instruments used. It is reasonable to assume that many outbursts would be fainter than 14.0_v and would go undetected. Only the maximum phase would be seen for the outbursts observed. This makes the data on widths unreliable. All that can be stated is that the outbursts with one exception appear to be short.

With the exceptions of Nos. 4 and 5 and 7 and 8, no two maxima appear to be consecutive. One can only suggest that the mean cycle is short. At minimum AH Eri is below 16.0_v.

AH Eri is stated to have a range of 13.5p to 17.5p with a mean cycle of 20-25 days (1). This data appears to be based on (2), where 12 maxima are given ranging from 13.5p to 15.0p. The mean is 14.35p. Intervals between these maxima range from 48 to 6,526 days. This wide scatter is no doubt due to the fact that the results were obtained from an investigation of Milky Way Field 211 using Harvard plates. These would be irregularly spaced in time. It is also noted (2) that "the rise and fall occupy not more than ten days."

The longest duration for any maximum in Table 1 is 6 days and this may be an anomalous maximum. In (2) there are two maxima brighter than the mean by 0.85 and 0.45 respectively. Whether these are also anomalous or an indication that AH Eri has some maxima distinctly brighter than normal is not clear. If the latter is true it might pay observing AH Eri photoelectrically with larger instruments to check whether the brightest maxima are in fact supermaxima.

2. TU MENSAE.

Observations of TU Men were discussed (3) to J.D. 2,443,874 (1978 Dec. 31). Table 2 is a continuation of outbursts observed with the very short faint peaks being denoted by "P" in the column for type of outburst.

TABLE 2.
OBSERVED OUTBURSTS OF TU MENSAE.

<u>No.</u>	<u>J.D. Max.</u>	<u>MAX.</u> <u>m_v</u>	<u>INT.</u> <u>d</u>	<u>WIDTH</u> <u>d</u>	<u>TYPE</u>	<u>No. OBS.</u>
85	2443,973	12.4	141	8	S	6
86	2444,013	13.5	41	(1	P	1
87	060	12.5	47	2.5	N	6
88	166	12.2	106	8	S	35
89	342	11.9	176	8	S	31
90	557	11.6	215	24.5	S	32
91	638	13.6	81	(1	P	1
92	648	12.6	10	2?	N	3
93	746	12.9	98	1	N	5
94	811	13.0	65	2	N	3
95	937	12.2	126	3	N	7
96	965?	13.8?	28	(1	P	1

DISCUSSION.

A previous paper (3) divided outbursts of TU Men into (a) bright maxima with a mean maximum magnitude of 11.98^m, and (b) faint peaks with a maximum brightness of 13.5^v to 14.3^v. The mean cycle between successive bright maxima was 193.6^d and for the faint peaks about 37 days. Bright maxima were classed as wide, if their duration was 6 days, or more,. If the duration was 5 days, or less, they were termed normal. The outbursts reported in the present paper have been combined with those previously published to give the following results:-

BRIGHT MAXIMA---WIDE. Mean Magnitude (20) 11.95(11.3-12.4)
 Width(19) 9.8 (7^d-14.5^d)
 Mean Cycle(13) 194.4(123^d-262^d).

Bright Maxima--Normal Mean Mag.(8) 12.37 (11.6-13.0)
 Width (8) 3.07 (1^d - 5^d).

PEAKS Mean magnitude (35) 13.91
 Mean width (35) 1.1.

Only maxima for which the parameters are definite have been included in the foregoing figures. The short duration peaks are a distinctive feature of this star and observations of them have been made by most observers. A question that cannot be answered is whether all the wide maxima are supermaxima. If this is so then occasionally TU Men has supermaxima of greater than average duration. Examples are No. 74 (3) 2,442,369 which lasted 20 days, and No. 90 on 2,444,557 lasting 24.5. If these two supermaxima are the only outbursts of that type then TU Men differs from other members of the SU UMa subgroup in having both supermaxima and wide bright maxima. On the other hand, if all bright wide maxima are supermaxima as shown in Table 2 then it appears that TU Men has two types of supermaxima.

The previous visual results (3) indicated that TU Men might be a member of the SU UMa subgroup. This was shown to be true (4). TU Men also has an orbital period (5) that lies within the well known period gap between 2 and 3 hours. TU Men is therefore one of the most important of the dwarf novae systems. It should be noted that after both the very long lasting supermaxima the mean cycle that applied to wide bright maxima was broken. After outburst No. 74 the following wide bright maximum came 462 days later, and after No. 90 513 days later in April 1982.

4.

3. AQ ERIDANI.

The observing season is August through April with a few observations in early May. AQ Eri has not been monitored as closely as many other dwarf novae. In Table 3 doubtful observations have been omitted unless confirmed by another observer.

TABLE 3.

OBSERVED OUTBURSTS OF AQ ERIDANI.

<u>No.</u>	<u>J.D. MAX.</u>	<u>MAX.</u> <u>m_v</u>	<u>INT.</u> <u>d</u>	<u>WIDTH</u> <u>d</u>	<u>TYPE</u>	<u>No. OBS.</u>
1	2442,899	13.0		5	N	3
2	2443,141	12.5	(242)	11	W	9
3	210	12.5	69	1?	N	1
4	275	13.6	65	?	?	1
5	894	13.2	(619)	1	N	4
6	900	12.6	6	11	W	23
7	2444, 086	13.9?	(186)	?	?	1
8	163	13.0?	77	7	W	3
9	282	13.4	119	1	N	3
10	518	13.8?	(236)	?	?	1
11	599	13.3	81	1	N	4
12	670	12.8	71	8?	W	3
13	916	11.5?	(246)	12	W	7
14	936	13.0	20	6	W	3

Notes

No.2 Positive observations preceded this maximum by 10 days but then discordant with estimate that AQ Eri was (15.0 so these observations disregarded.

No.3. Gap in observations for 2 days before 210.

No. 4. Gaps for 3 days before & for 7 days after 275.

Nos. 5 & 6. Possibly the same outburst. In which case the maximum was anomalous.

No.7. Gaps 4 days before & 3 days after 086.

No. 8. Gaps 2 days before & 7 days after 163.

No.10. Gaps 2 days before & 4 days after 518.

No. 13. Magnitude of 11.5 probably too bright.

There are many gaps in the observations. It cannot be definitely stated that any two maxima are successive. However, a mean cycle of about 76 days is indicated. This is in agreement with the catalogued value of 78 days. There is some evidence to suggest that AQ Eri has anomalous maxima. It may be a Z Cam type variable. The best determined magnitudes at maxima show that wide maxima are usually the bright. Mean maximum magnitude is 12.72 for wide and 13.33 for normal maxima. The light curve does not resemble that of Glasby (6).

4. Cw MONOCEROTIS.

The main observing season is December through April with a few observations in other months. Cw Mon has not been monitored closely and there are many gaps in the records.

TABLE 4.

OBSERVED OUTBURSTS OF CW MONOCEROTIS.

<u>No.</u>	<u>J.D. MAX.</u>	<u>MAX.</u> m_v	<u>INT.</u> d	<u>WIDTH.</u> d	<u>TYPE</u>	<u>No. OBS.</u>
1	2436,816	11.8	...	8?	W	6
2	2437,321?	11.8	(505)	?	?	2
3	633	-12.2	(312)	9?	W	2
4	684?	?	51	?	?	1
5	2438,056	11.5	(372)	?	W?	2
6	2439,168?	-12.1	(1112)	?	W?	2
7	867?	?	(699)	?	W?	5
8	2440,682	11.8	(815)	4?	W?	3
9	973?	?	(291)	?	N?	1
10	2441,392	12.7	(419)	6?	W	4
11	801	12.5	(409)	3?	N	1
12	2442,141	12.4	(340)	8	W	3
13	418	-13.0	(277)	10	W	5
14	2443,546	12.0	(1128)	11	A	30
15	2444,224	12.5	(678)	7	W	19
16	604?	12.4	(380)	?	N	1
17	711?	12.0	107	?	?	2
18	854	-13.6	143	?	N	1
19	929	12.0	75	8	W	9

Notes to Table 4.

N.B. A minus sign in front of magnitude indicates that the maximum was probably brighter than shown.

No. 1. Maximum had commenced before first observation.

No. 2. Gap of 10^d before first observation of maximum.

No. 3. Fall only observed. Gap of 19^d before first observation.

No. 4. Observed at 13.9 on 692 following a gap of 17^d. An outburst can only be suspected.

No. 5. Rise only observed. Gap of 17^d after 056.

No. 6. Part or fall only observed. Gaps of 20^d and 8^d before & after observations

No. 7. Bottom or fall only observed. Gap of 15^d before these observations. A very doubtful observation of 14.0? on 806 has been omitted. This followed a gap of 190^d and may have been the end of an outburst but the observer reported doubts about his observation.

No. 8. Gap of 6^d before observations. Recorded at 13.81 on 282 & this indicate a short outburst but has been disregarded as observer considered it very doubtful

No. 9. Possibly end of a short outburst.

No. 13. Gap of 6^d during maximum. Rise and fall only seen.

No. 14. Slow rise of 5 days.

No. 16. Negative observations shown any outburst was short.

No. 17. Gaps of 6^d before and after two observations at maximum.

No. 18. Negative observations suggest maximum fainter than usual.

No. 19. Gap of 16^d before first observation of this maximum.

DISCUSSION.

few of the observed maxima of Cw Mon are consecutive. If one accepts the catalogued value of 120 days for the mean cycle, the data in Table 4 give a mean cycle of 121.^d/. The individual cycles range from 51 to 156 days. All this implies is that a large number of maxima have gone unobserved.

The outbursts for which the maximum magnitude is fairly certain have a mean of 12.^m12, ranging from 11.^m to 12.^m/. Wide outbursts predominate in Table 4. This is what can be expected since they are more likely to be seen ALLOWING FOR THE MANY GAPS IN THE OBSERVATIONS. One anomalous maximum was recorded. Cw Mon appears to be a typical U Gem type variable.

5. BV PUPPIS.

The observing season is from November through June with a few observations in September and October. Observations were few and well scattered in time until 1978 December. Thereafter BV Pup has received closer attention.

TABLE 5.
OBSERVED OUTBURSTS OF BV PUPPIS.

<u>No.</u>	<u>J.D. MAX.</u>	<u>MAX.</u> <u>m_v</u>	<u>INT.</u> <u>d</u>	<u>WIDTH.</u> <u>d</u>	<u>TYPE</u>	<u>No. OBS.</u>
1	2437,350?	13.9		7?	w	3
2	2438,053	13.4	(703)	3?	N	3
3	2443,143?	13.0?	(5090)	?	?	1
4	481	13.5	(338)	?	?	1
5	499	14.2	18	?	?	2
6	520?	13.5	21	6?	w	2
7	608	14.3	(88)	?	?	1
8	633	13.0	25	6	w	6
9	811?	14.2	(178)	?	?	2
10	866	13.8	(55)	4	N	5
11	890	13.7	24	3	N	5
12	908	14.2	18	2	N	5
13	923	13.3	15	5	w	5
14	932	14.2	9	1	N	2
15	941	-13.8	9	10?	w	3
16	986	14.1	(45)	6	w	8
17	2444,009	13.4	23	4	N	4
18	028	13.6	19	2	N	2
19	229	13.7	(201)	5	w	12
20	249	13.4	20	9	w	12
21	285	13.0	(36)	2	N	3
22	299?	14.3?	14	?	?	1
23	345	13.5	(46)	1?	N?	2
24	367	13.7	22	2?	N	3
25	383	14.1	16	1?	N	1
26	412	13.6	29	?	?	1
27	504?	13.5?	(92)	?	?	1
28	570?	14.0?	(66)	7?	w	2
29	585	13.8	15	3	N	2
30	600	13.2	15	3+?	?	2
31	637	13.0?	(37)	2?	N	2
32	648	14.0	11	?	?	1
33	694	14.2	(46)	?	?	1
34	704	13.7	10	3	N	2

TABLE 5 (cont.).

<u>No.</u>	<u>J.D. MAX.</u>	<u>MAX</u> <u>m_v</u>	<u>INT.</u> <u>d</u>	<u>WIDTH</u> <u>d</u>	<u>TYPE</u>	<u>No. OBS.</u>
35	2444,729	13.2	25	4	N	3
36	755	13.0	26	?	?	2
27	932?	13.1?	(1/7)	?	?	1
38	937	13.4	5	5	w	5
39	963	13.8	28	1	N	3

NOTES TABLE 5.

- No.1. Maximum could have been brighter & earlier as gap of 30^d before first observations of this maximum.
 No.2. Gaps of 352^d and 646^d before and after the 3 observations of this outburst.
 No.6. Gap of 8^d days before outburst.
 No.7. Gaps of 5^d before & 6^d after 608.
 No.9. Gap of 53^d days after 811.
 No.26. Gaps of 3^d and 7^d on either side of single observation.
 No.27. Gap of 14 days after this single observation.
 No.28. Gap of 25^d days before maximum.
 No.30. Gaps of 12^d before and 7^d after maximum.
 Nos. 37 & 38. Possibly the same outburst, but observations show variable faded between these two dates so treated as two outbursts.

DISCUSSION.

There is little difference between the mean maximum magnitude of wide maxima (13.34) and normal maxima (13.68). Many maxima only reach a brightness that is at, or a little brighter, than the threshold of the instruments used. Those maxima that appear to be definitely consecutive give a mean cycle of 18.1. At minimum BV Pup appears to vary from 14.4 to 15.7_v.

TABLE 6.

OBSERVED OUTBURSTS OF BX PUPPIS.

<u>No.</u>	<u>J.D. MAX.</u>	<u>Max</u> <u>m_v</u>	<u>INT.</u> <u>d</u>	<u>WIDTH</u> <u>d</u>	<u>TYPE</u>	<u>No. OBS.</u>
1	2443,811	13.6	...	?	?	2
2	872	13.8	(61)	2	N	2
3	900	14.0	28	5	w?	7
4	927	13.7	27	2	N	2
5	933	14.3	6	1	N	1
6	848	13.6	16	10?	w	3
7	986	14.2	37	?	?	1
8	2444,011	13.8	25	4	N	4
9	024	13.9	13	?	?	1
10	230	13.2	(206)	2	N	7
11	286?	14.3	56	?	?	1
12	339	13.0	53	2	N	2
13	351	14.2	12	?	?	1
14	364	14.2	15	?	?	1
15	585	14.0	(221)	?	?	1
16	612	14.1	27	?	?	1
17	661	14.2	49	?	?	1
18	966	13.8	(305)	1?	N	1

8.

Notes to Table 6.

Nos. 4 & 5. Between these two maxima BX Pup declined to 15^m.
 No. 7 Gap 17 days before 986.
 No. 11. Gap of 6 days after 286.
 No. 15. Gap of 5 days before 585.

6. BX PUPPIS.

Observations commenced in 1978 October. The observing season is from December through June, with a few observations in October and November. It is a difficult star for most observers as the brightest maxima are little above the threshold of their telescopes.

DISCUSSION.

Mean maximum magnitude is 13.94. The few observations at minimum range from 14.7^m to 16.0^v. Few maxima can be definitely stated to be consecutive, but those that appear to be so give a mean cycle of about 18 days. This agrees with the catalogued value. Normal maxima appear to predominate, but this is probably due to only the maximum phase being observed. Much of the rises and declines would not be recorded as they are below the limit of the telescopes. BX Pup is classed as of the $\angle$ Cam type and the visual observations can provide no information on any standstills.

7. BB VELORUM

This star was first observed in 1976 February. It has been well monitored, especially from December through July each year. Fewer observations have been made in the other months.

TABLE 7.

OBSERVED OUTBURSTS OF BB VELORUM.

<u>No.</u>	<u>J.D MAX.</u>	<u>MAX.</u> _m	<u>INT.</u> _d	<u>WIDTH.</u> _d		<u>TYPE</u>	<u>No.</u> <u>OBS.</u>
1	2443,183?	14.8	...	2	N	2	
2	954	13.6	(771)	1?	N	1	
3	2444,008	13.8	54	4	N	5	
4	321	13.6	(313)	6	"	11	
5	628	13.5	(307)	7	"	20	
6	747	14.0	(119)	2	N	3	
7	959	14.3	(212)	?	?	1	

NOTES TO TABLE 7.

Three observations of 12.7^m were recorded on 2444,135; 141 & 142. These considered very doubtful & probably a misidentification. Accordingly they have been disregarded.
 No. 4. Nightly variations affected by moonlight.
 No. 6. Possibly at 14.0^m for 6 days.

DISCUSSION.

Observed maxima are few despite the close attention paid to BB Vel. Mean maximum magnitude is 13.83 - many maxima would pass unseen due to their faintness. Little of value can be obtained from Table 7. The limited number of observed outbursts yield no reliable information on the mean cycle. Minimum magnitude appears to be around 16.0^v.

CONCLUSIONS.

AH Eri, BV Pup, BX Pup and BB Vel all have mean maximum magnitudes within the range 13.34 to 13.94. For each of these stars it can be stated that many maxima have gone unobserved simply because they occur at magnitudes below the limits of the telescopes. AH Eri and BV Pup have short mean cycles, whilst BX Pup is a faint member of the Δ Cam type for which only the maximum phase of the brightest outbursts have been observed. Only a few maxima of BB Vel have been observed and, if it has a short mean cycle, most outbursts must be in the range of $14.^m$ to $15.^m$.

AQ Eri has wide and normal maxima with mean maximum magnitudes of 12.12 and 13.33 respectively. Its mean cycle is about 76 days. CW Mon has a mean maximum magnitude of 12.12 and a mean cycle of 121.7 days.

TU Men has supermaxima at mean intervals of 194.4 days. However, the question is raised as to whether all its wide maxima are really supermaxima because it has two maxima of widths exceeding 20 days. These may be the only true supermaxima for this star, or they may mark some fundamental change in the star's behaviour. These two supermaxima certainly were followed by abnormally long intervals without another wide maxima. The mean magnitude for wide maxima of TU Men is 11.95 compared to 13.91 for its faint peaks and 12.37 for its normal maxima. Of the seven systems discussed in this paper TU Men is the most important.

ACKNOWLEDGEMENTS.

All observers are sincerely thanked for their careful observations, without which this paper could not have been written. I also wish to thank so many who attended the 1981 Santa Cruz workshop on Cataclysmic Variables for their suggestions and encouragement.

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OBSERVATIONS OF SOME SOUTHERN DWARF NOVAE--PAPER 2.

FRANK M. BATESON

SUMMARY: This paper lists visual observations of the seven dwarf novae discussed in Paper 1. Sufficient observations are listed to show the coverage given to each star.

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OBSERVATIONS: A total of 7,442 visual observations were made to 1981 December 31. These covered the seven dwarf novae discussed in Paper 1 for varying time intervals. Included in the totals are 208 observations of EQ Mon made between J.D. 2,436,816 and 2,444,639 (1974 Sept. 4-1981 Feb. 3). Most were negative with EQ Mon being invisible and fainter than 13.5 but a few estimated the star to be 14.9 to 16.0. The observations were discontinued when it was shown (1) that EQ Mon was a red star and apparently not variable. The observations of EQ Mon are not included in Table 2.

Table 2 lists the individual observations with the exception that when a star was invisible usually only the limit of the faintest negative observation is listed for each night. In a few cases in Table 2 an observation appears slightly out of date order; these are not errors but caused by typing from the permanent sheets where some observations arrived out of order.

AH Eri.

The position of AH Eri on charts 311 and 312 (2) were taken from Brun & Petit's finding chart (3). This position was incorrect. A correction was published (4) but prior to this correction 141 negative observations had been made at the wrong position. These are included in the observers' totals but not in Table 2.

OBSERVERS.

The observers who contributed observations are listed in Table 1.

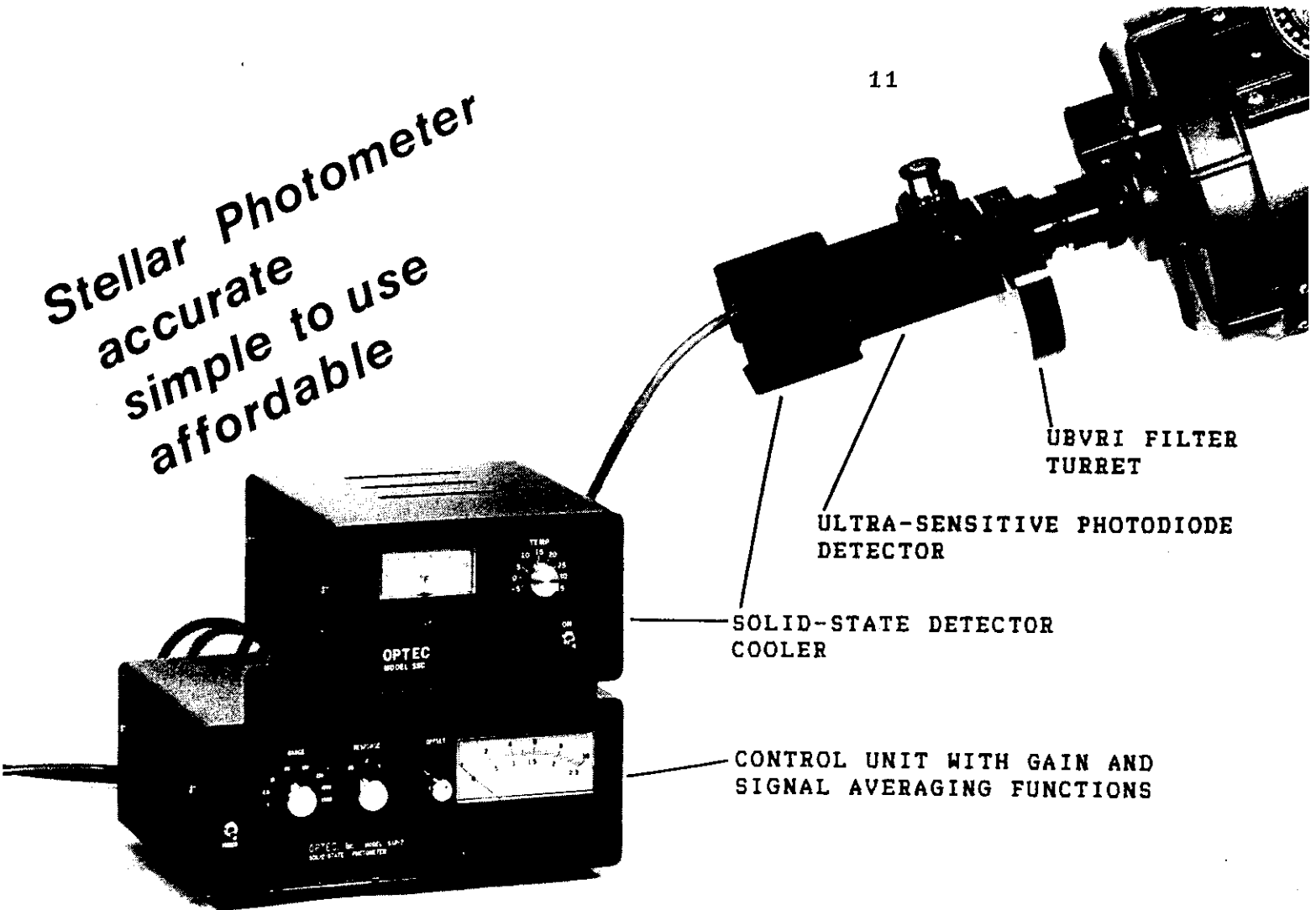
TABLE 1.OBSERVERS' TOTALS.

ADCOCK, B	=	75	HOVELL, S	=	407	ROWE, G.	=	375
BROWN, N.	=	511	JONES, A.	=	1488	SUMNER, B.	=	480
CRAGG, T.	=	180	JONES, M.	=	65	TREGASKIS, B	=	63
EMMERSON, R	=	79	MARINO, B.	=	1025	TAYLOR, N.	=	480
FREETH, G.	=	34	MATCHETT, V	=	66	WILLIAMS, P.	=	157
HARRIES-HARRIS, E.	=	346	MENZIES, B	=	159			
HULL, O.	=	1373	OVERBEEK, D	=	82			
			PARKINSON, M	=	33			
11 observers with less than 15 observations each							=	64

TOTAL = 7442 observations.

ACKNOWLEDGEMENTS: All observers are thanked for their observations. Despite the fact that many of these stars were rarely seen they persisted with their observations and have produced most useful results. My task has been made much easier by the clarity and efficiency with which our Recorder, Gordon Smith, has maintained the permanent records. My wife has given valuable assistance in compiling the two tables

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REFERENCES.

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CORRECTIONS TO TABLE 2.

The following corrections should be made to Table 2.

- PAGE 13. AH Eri. The J.D. at top of left hand column should read 2443000+
- PAGE 14. AH Eri. 2,444,195.16 insert "(" before 13.5
In same column as above after 200.90 insert (13.1
and the following entry should read 301.11 (13.5
- PAGE 19. TU Men. Left hand column entry 644.87 insert (13.8.
- PAGE 18. TU Men. Entry 2444, following 535.91 should read
536.96 (12.9 and the following entry should be
537.84 (13.7
- PAGE 21. AQ Eri. 2,443,567.0 delete "b" before 16.0.
- PAGE 26. CW Mon. 2439,875.99 delete "m" before 13.9.
2440,596.00 insert "9" before 13.4
- PAGE 29. CW Mon. 2443,986.86 should read (13.4 and 2,444,229.93
should be (14.5
- PAGE 31. BV Pup. For 2443,824.13 13.6 read 924.13 13.6
- PAGE 31. BV Pup. Delete the entry between 2443,940.01 and 951.01
and insert: 941.14 13.8 and 949.04 13.9
- PAGE 31 BV Pup. Insert question mark after entries for
2444,229.96 13.3 & 230.06 12.6.
- PAGE 32. BV Pup. 2,444,406.78 should read (13.0
- PAGE 32. BV Pup. After 693.98 the following entry should read
694.83 (13.5
- PAGE 34/ BB Vel. After the following entries delete the "9" in
front of the magnitude and insert "(":
2,443,226.0; 431.2; 499.0
- PAGE 35. BB Vel. Entry after 2,443,991.02 should read 991.97 (14.4
- PAGE 37. BB Vel. 2,444,732.3 insert "(" in front of 13.4

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TABLE 2.

OBSERVATIONS OF DWARF NOVAE.

AH Eri. 041813	AH Eri. 041813	AH Eri. 041813	AH Eri. 041813	AH Eri. 041813
243000+	2443000+	2443000+	2443000+	2444000+
509.89 (13.1	727.16 (13.1	844.92 (13.5	899.97 (13.5	060.36 (13.5
510.91 (13.1	728.31 (14.0	845.89 (13.1	900.03 (14.0	074.26 13.8
512.91 (13.1	732.36 (14.5	847.89 (13.1	901.03 (14.0	075.26 13.8
514.95 (13.5	734.35 (14.0	847.96 13.8	901.87 (13.5	076.26 (13.6
515.06 (13.6	735.35 14.5?	848.92 13.5	902.07 (14.0	076.32 13.5
515.89 (13.1	743.20 (12.6	848.96 (13.5	902.97 (13.5	077.23 13.5
517.93 14.0	744.24 (12.6	849.94 (13.1	903.03 (14.0	077.25 14.0
518.89 13.8	748.09 (13.5	852.99 (12.5	903.96 (13.5	080.25 (13.6
518.93 13.8	752.08 (13.5	857.91 (12.5	904.03 (14.0	081.25 (13.6
519.95 13.8	753.07 (13.1	860.92 (13.5	904.88 (12.5	083.27 (13.5
520.89 13.8	754.08 (13.1	861.97 (13.5	906.97 (13.5	084.25 (13.6
520.98 14.1	754.23 (13.5	862.0 (14.6	907.03 (13.8	084.30 (14.5
521.08 (13.5	755.21 (13.5	863.95 (13.5	907.96 (13.5	086.36 (14.5
521.91 (13.1	756.21 (13.5	864.89 (13.1	909.03 (13.5	088.25 13.7
522.98 (13.1	757.13 (13.5	865.94 (13.1	909.88 (13.5	089.25 13.8
523.06 (13.5	758.24 (13.5	866.06 (14.0	910.01 (13.5	089.29 (13.5
523.89 (13.1	759.16 (13.1	866.90 (13.1	914.89 (12.5	090.17 (13.5
534.92 (13.5	762.26 (14.0	867.06 (14.0	917.90 (14.0	097.11 (12.6
535.88 (13.5	768.27 (13.5	868.05 (14.0	919.92 (13.5	103.29 (13.5
536.99 (14.0	778.13 (13.5	869.94 (13.1	923.02 (13.5	107.25 (13.5
537.89 (13.5	779.07 (12.8	870.05 (14.0	926.01 (13.5	110.09 (12.6
539.95 (13.5	783.21 (13.5	870.91 (13.1	927.96 (13.5	110.2 (15.0
542.93 (14.0	785.10 (13.5	871.04 (14.5	928.03 (14.0	117.31 (15.0
544.92 (14.0	786.00 (12.6	871.90 (13.1	930.94 (13.5	135.23 (13.6
545.01 (14.4	787.20 (13.5	872.19 (14.5	933.01 (14.2	138.06 (13.5
545.99 (14.4	788.19 (13.5	872.93 (13.5	933.85 (13.5	139.26 (13.8
546.94 (14.4	790.14 (13.5	873.97 (13.1	935.01 (14.0	141.20 (13.6
547.94 (13.5	798.18 (12.6	874.08 (13.5	936.85 (13.5	143.09 (13.5
548.03 (14.2	799.12 (12.6	874.88 (13.1	937.96 (13.5	145.25 (13.9
548.92 (14.0	805.18 13.5	875.94 (13.5	939.0 (14.6	153.13 (13.1
549.87 (13.6	805.99 (14.0	876.92 (13.5	939.97 (13.5	159.18 (13.8
550.92 (13.8	809.91 (13.1	877.11 (13.5	948.99 13.8	163.03 (12.6
551.88 (13.6	810.20 (14.0	877.92 (13.5	950.99 14.0	169.00 13.8
553.00 (13.5	810.93 (13.1	878.22 (14.0	951.90 13.5	170.01 (14.0
554.97 (13.8	811.33 (14.5	879.86 (12.6	951.94 13.2	171.00 (13.5
557.90 (13.5	811.99 (12.6	880.89 (13.5	952.90 13.5	172.03 (13.5
563.90 (13.5	812.93 (13.1	881.89 (13.5	953.92 13.5	173.19 (13.8
565.87 (13.5	818.17 (13.5	883.91 (13.1	954.91 14.0	174.15 (13.5
566.9 16.6	818.94 (13.1	884.88 (12.6	955.00 14.2	175.08 (13.5
567.85 (13.5	819.89 (12.6	887.93 (13.1	956.82 (13.5	178.08 (13.5
568.98 (14.0	822.13 (13.5	888.92 (12.6	956.91 (14.0	180.12 (13.0
569.92 (14.0	827.01 (12.6	890.02 (13.5	958.82 (13.5	181.15 (12.5
572.92 13.6?	829.93 (13.5	890.89 (13.5	960.81 (13.5	186.90 (13.1
573.90 (13.5	830.87 (13.1	891.87 (13.5	962.93 (13.5	187.12 (13.5
575.92 (13.8	831.95 13.7	893.89 (13.1	965.98 (13.5	188.13 (13.8
577.90 (13.5	832.95 13.8	894.03 (14.0	967.97 (13.5	190.06 (13.5
580.90 (13.8	837.89 (13.1	894.94 (13.5	981.88 (13.5	190.92 (13.5
581.90 (13.5	838.89 (13.1	895.03 (14.0		191.13 (13.5
594.89 (14.0	839.88 (13.1	895.93 (13.5		191.89 (13.5
595.90 (13.5	841.03 (13.5	896.94 (13.1		193.15 (13.8
601.92 (14.0	841.92 (13.5	898.11 (14.0		193.89 (13.5
602.93 (13.5	842.90 (13.5	898.95 13.5		194.05 (13.5
604.91 (12.8	843.87 (13.1	899.03 (14.2		194.95 (13.5

TABLE 2 (cont)

AH Eri. 041813	AH Eri. 041813	AH Eri. 041813	AH Eri. 041813	AH Eri. 041813
2444000+	2444000+	2444000+	2444000+	2444000+
195.16 (13.5)	235.09 (13.5)	317.93 (12.5)	571.10 (14.0)	692.93 (11.6)
197.14 (13.8)	235.93 (13.1)	318.93 (12.5)	575.12 (14.0)	700.92 (12.8)
198.86 (13.5)	238.06 (12.2)	319.90 (13.5)	577.09 (15.3)	701.93 (12.8)
199.05 (13.5)	244.02 (12.5)	320.83 (13.1)	579.95 (13.1)	705.93 (12.8)
199.93 (13.5)	244.91 (13.5)	325.83 (13.1)	580.10 (14.0)	797.23 (13.1)
200.90 (13.5)	246.02 (12.5)	327.82 (13.1)	580.95 (12.8)	819.24 (13.6)
- 11 (13.5)	246.96 (13.5)	331.96 (11.6)	582.95 (13.5)	827.24 (13.6)
202.00 (13.6)	247.98 (12.5)	332.89 (13.5)	583.03 (13.5)	828.22 (13.6)
303.12 (13.8)	250.13 (14.0)	333.83 (13.1)	584.00 (13.5)	830.24 (13.1)
203.99 (13.6)	256.91 (13.5)			
		335.92 (12.8)	584.96 (13.5)	833.10 (12.5)
204.03 (13.5)	251.13 (14.0)	336.89 (13.5)	585.08 (15.5)	834.20 (13.1)
207.96 (12.5)	251.89 (13.5)	337.94 (12.8)	587.13 (15.0)	837.25 (13.1)
208.89 (13.1)	252.93 (13.5)	339.93 (12.8)	587.95 (13.5)	843.17 (13.6)
209.89 (12.5)	253.88 (13.5)	340.90 (13.5)	588.08 (13.5)	846.16 (13.6)
211.89 (12.6)	254.88 (13.9)	342.89 (13.5)	588.90 (13.5)	854.07 (13.1)
214.93 (13.5)	255.05 (13.9)	343.93 (11.6)	590.08 (12.6)	859.11 (13.1)
215.86 (13.1)	255.96 (13.5)	345.93 (12.8)	596.94 (13.5)	868.13 (13.1)
216.07 (13.8)	256.13 (13.5)	359.89 (13.5)	597.08 (12.8)	869.22 (12.6)
216.92 (13.5)	256.94 (13.5)	444.16 (13.1)	598.88 (13.6)	871.16 (13.6)
217.00 (12.8)	257.07 (13.9)			
		446.22 (13.1)	601.83 (13.1)	872.10 (13.5)
217.11 (13.8)	261.96 (13.5)	455.12 (12.6)	602.99 (13.5)	873.14 (13.6)
217.94 (14.0)	270.89 (12.6)	456.26 (13.1)	603.96 (13.1)	876.06 (13.6)
217.96 (13.5)	271.90 (12.6)	459.18 (13.5)	604.89 (13.1)	879.10 (13.5)
217.98 (12.8)	272.88 (13.1)	460.25 (13.6)	605.90 (13.1)	881.06 (13.6)
218.98 (13.6)	274.92 (13.5)	461.21 (13.6)	606.91 (13.1)	882.23 (15.0)
219.95 (14.2)	275.97 (11.6)	462.15 (13.6)	607.89 (13.6)	886.13 (13.6)
220.07 (13.8)	276.97 (12.5)	464.11 (13.1)	608.89 (13.1)	887.17 (13.5)
220.88 (13.5)	278.88 (13.5)	466.18 (13.1)	609.92 (13.6)	904.00 (13.1)
221.99 (13.8)	279.98 (12.5)	467.22 (13.6)	612.03 (13.5)	904.02 (14.0)
222.00 (13.6)	280.94 (13.5)	481.21 (13.1)	614.98 (13.5)	906.15 (13.8)
222.14 (13.8)	282.01 (13.5)			
		482.13 (13.1)	615.98 (13.5)	912.1 (15.0)
223.07 (13.5)	282.97 (12.5)	485.13 (13.1)	616.98 (13.5)	912.95 (11.3)
223.89 (13.5)	283.05 (15.0)	488.20 (13.1)	625.89 (12.6)	916.00 (12.8)
224.90 (13.5)	284.97 (12.5)	490.18 (13.1)	627.89 (13.1)	926.10 (13.5)
225.99 (12.8)	285.08 (14.0)	491.09 (13.1)	628.93 (13.1)	929.01 (13.5)
226.88 (13.5)	288.97 (13.5)	494.13 (13.6)	629.91 (13.1)	929.95 (13.9)
227.05 (13.5)	292.94 (12.0)	495.12 (13.6)	630.97 (13.5)	930.02 (13.5)
227.89 (13.5)	293.97 (12.5)	496.13 (13.6)	631.90 (13.1)	931.93 (13.5)
228.06 (13.8)	303.95 (13.6)	502.18 (13.6)	632.89 (13.1)	933.95 (13.9)
228.98 (12.8)	304.94 (13.6)	503.14 (13.1)	633.89 (13.1)	934.04 (13.5)
229.07 (15.5)	305.98 (13.5)		634.98 (13.5)	934.94 (13.9)
		510.17 (13.1)		
229.89 (13.5)	306.88 (13.1)	524.08 (13.1)	635.97 (13.5)	935.90 (12.8)
230.06 (13.5)	307.87 (13.5)	525.10 (14.0)	641.92 (13.1)	941.91 (13.9)
230.20 (13.8)	308.92 (13.1)	540.97 (13.5)	642.98 (13.6)	942.92 (13.9)
230.89 (13.5)	310.92 (13.6)	545.95 (13.5)	651.88 (13.1)	948.95 (12.7)
231.06 (13.5)	311.93 (13.5)	550.00 (14.5)	658.90 (12.8)	953.93 (14.3?)
231.94 (13.5)	313.90 (13.1)	554.95 (13.5)	659.93 (13.1)	953.96 (13.5)
232.90 (13.5)	313.92 (13.7)	557.00 (14.5)	660.86 (13.1)	953.98 (13.5)
233.00 (12.8)	314.95 (12.8)	564.0 (14.0)	668.97 (11.6)	955.08 (13.8)
234.99 (12.5)	315.94 (13.1)	569.90 (13.5)	669.96 (11.6)	955.95 (13.8)
	316.94 (12.8)		688.93 (11.6)	955.98 (13.9)

TABLE 2 (cont).

AH Eri. 041813	TU Men. 044576	TU Men. 044576	TU Men. 044576	TU Men. 044576
2444000+	2443000+	2443000+	2443000+	2444000+
956.12 14.0	876.82 (13.9)	910.08 (13.9)	958.82 (13.9)	004.78 (13.0)
956.89 (13.5)	877.05 (14.3)	912.93 (13.5)	960.81 (13.9)	005.81 (13.0)
957.09 (13.5)	877.94 (13.8)	912.96 (14.8)	961.82 (13.8)	006.78 (13.0)
957.10 (13.8)	878.15 (13.9)	914.87 (13.0)	963.88 (13.5)	008.92 (13.8)
958.90 (13.9)	878.89 (13.0)	914.89 (13.3)	964.81 (13.0)	009.81 (13.8)
959.02 (13.5)	879.92 (13.5)	916.90 (12.5)	964.93 (13.5)	010.99 (13.7)
960.00 (13.5)	880.89 (13.8)	917.17 (13.7)	965.93 (13.0)	011.97 (13.7)
960.98 (13.5)	882.89 (13.8)	918.92 (13.3)	966.04 (13.9)	012.79 (13.5)
961.02 (13.9)	882.18 (13.8)	918.93 (14.5)	966.92 (13.8)	012.88 (13.0)
963.98 (13.9)	883.89 (13.5)	919.93 (13.9)	966.94 (13.5)	012.9 13.5
964.90 (13.5)	884.93 (13.8)	923.90 (13.5)	967.9 15.1	013.55 (13.5)
965.00 (13.6)	887.09 (12.5)	924.88 (13.8)	969.01 (13.8)	013.81 (13.0)
965.10 (13.9)	887.90 (13.0)	925.91 (13.8)	969.90 (13.0)	014.92 (13.0)
965.92 (13.9)	888.88 (13.8)	926.02 (13.9)	970.82 (13.0)	015.82 (13.5)
966.11 (15.0)	890.88 (13.8)	926.90 (13.9)	971.84 12.4	017.79 (13.0)
966.99 (13.6)	890.88 (13.9)	927.11 (13.9)	975.81 12.4	017.82 (13.5)
968.93 (13.9)	891.87 (13.9)	927.96 (13.9)	976.80 12.8	017.95 (13.8)
970.91 (13.9)	891.89 (13.8)	928.07 (14.3)	977.93 (12.5)	018.96 (13.8)
	893.92 (13.3)	928.95 (13.3)	978.79 12.6	018.79 (13.0)
	894.01 (13.5)	929.90 (13.3)	978.82 13.5	020.78 (13.8)
	894.03 (13.9)	930.98 (14.5)	978.94 (13.0)	021.95 (13.9)
	894.94 (14.3)	932.07 (13.9)	979.81 13.7	022.78 (13.5)
	895.00 (13.8)	933.05 (13.9)	979.91 (13.0)	023.97 (13.8)
	895.05 (13.9)	933.85 (13.9)	979.94 (13.3)	024.83 (13.5)
	895.93 (13.9)	934.03 (13.9)	981.25 (12.5)	026.92 (13.5)
	896.92 (13.5)	934.91 (13.9)	981.93 (13.8)	027.23 (13.0)
	897.91 (13.8)	935.02 (13.9)	985.91 (13.8)	027.26 (13.9)
	897.91 (13.5)	935.97 (13.9)	986.93 (13.5)	027.88 (13.8)
	898.13 (13.9)	936.85 (13.9)	987.00 (13.9)	028.07 (13.0)
	898.88 (13.8)	937.09 (13.9)	987.94 (13.5)	028.77 (13.0)
	899.05 (14.3)	937.84 (13.9)	988.82 (13.8)	029.78 (13.7)
	899.89 (13.5)	937.9 (15.5)	989.83 (13.8)	030.12 (13.8)
	899.91 (14.5)	938.00 (13.9)	990.04 (13.7)	030.25 (13.9)
	899.97 (13.9)	938.93 (13.8)	990.9 15.2	031.25 (13.0)
	900.05 (13.9)	939.05 (13.7)	992.90 (13.0)	032.26 (13.0)
	901.05 (13.9)	940.00 (13.7)	991.00 (13.8)	033.26 (13.7)
	901.87 (13.9)	940.86 (13.8)	991.96 (13.9)	033.77 (13.0)
	902.09 (13.9)	941.12 (13.0)	993.94 (13.5)	034.14 (12.5)
	902.91 (13.0)	941.15 (13.7)	994.93 (13.5)	034.85 (12.5)
	903.05 (13.9)	945.91 (13.0)	995.02 (13.8)	037.85 (13.5)
	903.89 (13.5)	948.99 (13.9)	995.30 (13.9)	038.78 (13.0)
	903.92 (13.8)	949.85 (13.3)	995.97 (13.9)	038.90 (13.5)
	904.08 (13.9)	951.01 (13.9)	996.92 (13.3)	041.27 (13.5)
	904.90 (13.7)	951.8 15.5	997.89 (13.0)	041.80 (13.7)
	906.0 (15.7)	953.16 (13.5)		041.81 (12.5)
	906.93 (13.7)	953.84 (13.0)		042.16 (13.0)
	907.06 (13.9)	955.01 (13.8)		044.91 (13.5)
	908.11 (13.9)	955.95 (13.8)		045.86 (13.5)
	909.04 (13.9)	956.02 (13.9)		046.25 (13.9)
	909.88 (13.8)	956.81 (13.0)		

TABLE 2 (cont)

TU Men 044576	TU Men. 044576	TU Men. 044576	TU Men. 044576
2444000+	2444000+	2444000+	2444000+
048.86 (13.8	121.24 (13.0	167.91 12.4	188.89 (13.8
049.90 (13.5	122.9 (14.5	167.98 12.2	189.94 (14.0
050.25 (13.9	124.18 (13.0	168.0 13.2	190.05 (13.0
050.80 (13.0	125.82 (13.3	168.83 12.4	190.91 (13.8
051.25 (13.7	126.86 (13.9	168.87 12.6	191.13 (12.5
057.79 (13.5	128.81 (13.9	168.88 12.4	191.88 (13.9
059.78 12.7	129.92 (13.5	168.95 11.9	192.0 (16.0
060.25 12.5	131.0 14.7	168.96 12.3	192.85 (13.8
060.78 12.8	131.96 (13.8	168.97 12.1	193.15 (13.8
061.21 12.8	133.91 (13.5	169.87 12.4	193.86 (13.9
061.22 13.1	134.91 (13.5	169.89 12.2	194.05 (13.9
062.14 (13.0	135.23 (13.9	169.91 12.1	194.95 (13.8
062.23 13.7	135.88 (13.0	168.92 12.7	195.09 (13.8
062.78 (13.0	136.81 (13.9	170.13 12.6	195.88 (13.0
063.17 (13.0	138.21 (13.9	170.83 12.6	197.15 (13.8
063.25 (13.5	138.91 (13.5	170.83 12.8	197.91 (13.5
066.78 (13.5	139.15 (13.8	170.87 12.9	198.91 (13.9
066.86 (13.8	139.82 (13.0	171.83 12.9	199.05 (13.9
067.78 (13.0	140.92 (13.8	171.84 12.7	199.93 (13.8
068.85 (13.5	141.21 (13.9	171.86 12.6	200.87 (14.0
069.93 (13.5	141.82 (13.0	171.88 13.4	201.08 (13.8
070.25 (13.5	142.21 (13.5	171.91 12.2?	201.91 (13.5
071.82 (13.5	142.87 (13.3	172.06 12.8	202.03 (13.8
072.25 (13.5	143.06 (13.8	172.18 12.6	202.85 (13.9
074.25 (13.7	143.83 (13.9	172.93 13.0	203.85 (13.9
075.25 (13.9	145.27 (13.8	172.93 12.9	204.00 (13.8
076.10 (13.7	145.95 (13.3	172.95 13.3	207.95 (13.0
077.26 (13.8	150.91 (13.0	173.21 13.3	208.86 (13.0
079.91 (13.3			
080.25 (13.7	151.88 (12.5	173.84 13.2	209.88 (13.0
081.25 (13.9	152.82 (12.5	173.87 (13.3	210.07 (12.5
	153.11 (13.0	173.93 (13.3	211.86 (13.0
083.97 (13.5	154.95 (13.8	173.94 (13.5	212.13 (12.5
084.25 (13.9	155.86 (13.5	174.11 (13.8	212.97 (12.5
088.25 (13.8	156.87 (13.5	174.83 (13.0	214.93 (13.8
089.25 (13.9	158.94 (13.8	175.06 (13.8	215.08 (13.0
090.19 (13.5	159.17 (13.8	175.92 (13.7	215.87 (13.5
091.25 (13.9	161.1 (14.5	178.07 (12.5	216.06 (13.7
095.20 (13.5	161.89 (13.5	179.86 (12.5	216.99 (13.8
097.10 (13.0	161.98 (13.8	180.05 (13.2	217.12 (13.7
097.88 (13.5	162.95 (12.5	180.85 (13.3	219.87 (13.9
100.81 (13.5	163.02 (13.0	181.12 (13.0	220.09 (13.7
			220.90 (13.9
103.29 (13.8	163.90 (13.8	183.92 (13.3	
104.94 (13.5	164.90 (13.8	184.16 (13.7	221.91 (13.5
105.1 16.0	165.94 12.5	184.92 (13.8	222.11 (13.9
105.93 (13.3	166.96 12.2	185.11 (13.0	223.11 (13.8
106.91 (13.3	167.0 12.3	186.11 (13.6	223.87 (14.0
110.07 (13.0	167.19 11.7?	186.88 (13.4	224.12 (13.7
111.82 (13.8	167.83 12.4	187.09 (13.8	224.90 (13.8
112.86 (13.5	167.87 12.3	187.93 (13.9	224.90 (13.8
113.25 (13.5		188.11 (13.6	226.86 (13.8
			227.11 (13.9
			227.88 (13.9

TABLE 2 (cont)

<u>TU Men.</u> <u>044576</u>	<u>TU Men.</u> <u>044576</u>	<u>TU Men.</u> <u>044576</u>	<u>TU Men.</u> <u>044576</u>
2444000+	2444000+	2444000+	2444000+
228.06 (13.7	264.16 (13.6	309.86 (14.3	348.80 13.0
228.91 (14.5	264.88 (13.5	310.00 15.3	348.83 13.0
229.12 (13.8	265.05 (13.8	310.91 (14.3	348.85 12.9
229.89 (13.9	265.89 (13.5	311.20 (13.2	348.90 13.4
230.12 (13.7	266.93 (13.0	311.95 (13.8	348.96 12.1
230.89 (13.9	267.03 (13.0	312.91 (13.2	349.25 13.4
231.06 (13.9	268.15 (13.5	313.86 (13.2	349.88 13.5
231.89 (13.8	268.92 (13.0	314.88 (13.0	349.90 (13.8
232.12 (13.0	269.96 (12.9	315.92 (13.7	350.91 (13.0
232.95 (13.8	270.88 (13.0	317.95 (13.1	351.24 (13.9
234.87 (13.5	271.91 (13.5	318.92 (13.8	351.95 (13.1
235.05 (13.8	272.86 (13.0	319.90 (14.3	352.86 (13.3
235.88 (13.5	273.02 (13.0	320.14 (13.1	353.86 (13.3
237.93 (13.3	274.03 (13.7	320.93 (13.7	354.89 (13.2
238.06 (13.0	274.89 (14.5	322.89 (13.5	355.04 (12.5
238.97 (13.3	275.03 (13.7	324.84 (13.2	356.90 (12.5
239.93 (13.5	275.93 (14.0	325.11 (13.1	357.80 (13.0
241.87 (12.9	277.0 15.7	325.87 (13.3	358.85 (12.4
242.87 (13.7	277.97 (13.9	327.82 (13.3	359.79 (13.1
243.00 (13.5	278.08 (13.7	329.92 (13.3	
243.87 (13.5	278.86 (13.7	330.89 (12.6	360.79 (12.9
244.13 (13.0	279.16 (13.6	332.92 (13.8	361.80 (13.9
244.89 (13.8	279.89 (13.7	333.81 (14.3	362.81 (13.2
245.04 (13.7	280.14 (13.5	336.84 (14.3	363.78 (13.2
245.91 (13.5	280.96 (14.3	337.84 (13.2	364.92 (13.8
246.93 (13.8	281.13 (13.5	338.88 15.3	365.91 (13.2
247.96 (14.0	281.86 (13.0	339.81 (13.0	366.79 (13.2
248.92 (13.8	282.03 (13.7	340.82 (13.7	367.80 (13.5
249.07 (13.7	284.89 (13.2	341.80 11.8	368.80 (13.2
249.92 (13.8	285.06 (13.7	341.82 11.3	369.75 (13.7
250.14 (13.8	286.10 (13.7	341.87 11.9	370.80 (13.2
250.88 (14.0	286.93 (13.2	342.79 12.0	372.85 (13.2
251.11 (13.0	287.87 (13.2	342.82 12.5	374.80 (13.2
251.89 (13.9	288.96 (14.3	342.90 12.5	375.82 (13.2
252.15 (13.0	289.91 (13.8	343.84 12.9	377.25 (13.2
252.93 (13.8	291.0 15.0	343.87 12.2	377.89 (13.8
253.0 (15.3	291.91 (13.8	343.89 12.7	378.86 (13.2
253.88 (13.8	292.93 (14.5	343.83 12.9	379.80 (12.9
254.04 (13.8	293.86 (13.7	344.79 11.9	380.84 (13.2
254.88 (13.8	294.09 (13.8	344 12.2	381.80 (13.2
255.95 (13.8	295.90 (13.9	344.91 12.1	382.89 (13.8
256.16 (13.7	296.20 (13.2	344.94 12.3	383.79 (13/0
256.89 (13.8	296.86 (13.2	345.81 12.2	384.78 (13.0
257.00 (13.9	301.84 (13.7	345.96 12.2	386.25 (13.2
257.95 (14.3	302.09 (13.0	346.80 12.2	386.79 (13.0
258.17 (13.7	303.86 (13.2	346.81 12.9	387.79 (13.2
258.95 (12.5	304.93 (14.3	346.93 12.4	388.79 (13.2
260.12 (12.9	305.88 (13.8	346.93 12.4	389.78 (12.6
260.94 (13.7	306.87 (13.8	346.99 12.4	392.89 (13.8
261.10 (13.8	307.87 (13.8	347.82 12.6	395.85 (13.2
261.89 (13.8	308.04 (14.3	347.89 12.6	397.90 (13.8
263.87 (14.0	308.91 (13.8	347.93 12.3	398.80 (13.0

TABLE 2 (cont).

<u>TU Men.</u> 044576	<u>TU Men.</u> 044576	<u>TU Men.</u> 044576	<u>TU Men.</u> 044576
2444000+	2444000+	2444000+	2444000+
399.91 (13.2	455.94 (12.9	502.89 (12.2	566.87 12.1
400.24 (13.2	456.07 16.0	503.12 (13.1	566.89 12.4
400.81 (13.0	456.87 (12.2	503.80 (12.2	567.03 12.6
402.25 (13.7	457.25 (13.2	504.19 (13.9	567.86 12.4
402.81 (13.0	457.94 (13.2	510.19 (13.1	568.87 (12.0
403.79 (13.0	458.26 (13.9	510.92 (13.2	569.90 12.2
404.26 (13.7	458.90 (12.9	511.1 (15.0	569.95 13.0
404.76 (13.2	459.13 (13.8	511.92 (13.8	570.00 12.4
405.11 (13.2	459.92 (13.8	512.85 (13.7	571.03 12.5
405.85 (13.2	460.25 (13.8	513.86 (13.2	571.91 12.8
407.96 (13.2	460.78 (12.9	514.89 (13.2	
			572.92 13.0
408.90 (13.8	461.12 15.5	515.96 (13.8	574.90 12.8
409.82 (13.2	461.94 (13.2	517.92 (13.8	575.90 12.8
411.26 (13.9	462.15 (13.8	518.92 (13.2	576.96 12.7
412.24 (13.7	464.05 (13.1	520.99 14.8	577.14 12.8
415.95 (13.0	465.26 (13.2	523.95 (13.2	578.01 12.0
417.26 (13.2	465.92 (12.9	524.07 (13.2	578.90 13.9
421.78 (13.0	466.14 (13.8	525.93 (13.8	579.87 12.9
423.79 (14.3	466.87 (12.9	526.96 (13.8	580.15 13.1
474.28 (13.2	467.22 (13.2	527.95 15.2	579.96 12.9
425.22 (13.2	467.83 (12.9	528.95 (13.7	
			580.91 13.3
425.79 (13.2	468.23 (13.2	530.89 (13.7	581.14 13.4
426.89 (13.8	468.95 (13.2	531.86 (13.3	581.89 (13.7
428.25 (13.7	469.96 (13.8	532.88 (12.9	582.15 (13.7
430.93 (13.0	472.25 (13.2	535.91 (13.3	582.95 (13.8
432.97 (13.2	475.24 (13.9	536.92 (12.9	583.12 (13.9
433.25 (13.9	477.11 (13.2	537.84 (13.7	584.04 (15.7
433.85 (13.2	481.21 (13.2	538.89 (13.2	584.98 (13.8
434.90 (13.0	482.10 (13.8	539.92 (13.8	585.16 (15.0
435.79 (13.2	482.95 (13.2	541.88 (13.2	586.91 (13.2
436.25 (13.7	483.21 (13.1	542.85 (13.7	
			589.88 (13.5
436.78 (13.2	484.93 (13.2	544.94 (13.2	590.06 (14.5
437.15 (13.8	485.12 (13.2	545.91 (13.8	593.12 (13.2
437.81 (13.0	487.92 (13.2	546.83 (13.7	593.89 (12.9
438.10 (13.9	488.19 (13.8	549.91 (13.9	595.92 (12.2
439.78 (12.2	488.96 (13.2	552.91 (13.2	597.96 (13.8
440.26 (13.9	489.06 15.6	553.87 (13.8	598.97 (13.8
443.79 (12.9	489.94 (13.2	554.94 (13.2	599.95 (14.5
444.26 (13.9	491.09 (13.8	555.90 (13.8	601.97 (13.8
444.79 (12.9	492.83 (13.2	556.03 16.5	603.95 (13.8
445.14 (13.1	493.81 (13.8	556.90 12.0	
			605.89 (13.8
445.26 (13.9	494.13 (13.8	556.96 11.6	606.00 (13.9
446.25 (13.9	495.10 (13.8	559.92 11.8	606.95 (13.2
447.27 (13.2	495.92 (13.2	560.06 12.1	607.89 (13.8
447.78 (12.2	496.19 (13.8	560.93 12.2	608.00 14.8
449.14 (12.2	496.94 (13.8	561.02 12.4	608.89 (13.7
450.85 (13.2	497.96 (14.3	561.12 12.1	609.11 (13.7
453.13 (13.1	499.07 15.5	562.90 12.6	609.89 (14.0
453.86 (12.9	499.93 (13.2	563.14 12.4	610.11 (13.7
454.89 (13.8	501.08 (13.8	565.87 11.8	610.89 (14.0
455.05 (13.8	502.20 (13.9	566.85 12.1	

TABLE 3 (cont.).

<u>TU Men.</u> 044576	<u>TU Men.</u> 044576	<u>TU Men.</u> 044576	<u>TU Men.</u> 044576
2444000+	2444000+	2444000+	2444000+
611.15 (13.7	665.00 (13.9	719.82 (13.2	777.84 (12.2
612.92 (14.0	666.86 (14.3	720.81 (13.2	778.80 (13.9
614.89 (13.8	667.85 (13.0	721.81 (13.5	779.81 (13.9
614.17 (13.2	668.94 15.0	722.24 (13.3	780.82 (13.2
614.96 (13.9	670.3 (12.2	722.91 (13.9	783.91 (13.8
615.08 (13.7	671.04 (13.0	723.23 (13.3	784.89 (13.8
615.93 (13.2	673.88 (14.5	723.85 (13.0	785.21 (13.9
618.98 15.3	674.94 (13.7	724.93 (13.2	786.25 (13.2
620.14 (13.2	676.3 (12.2	725.22 (11.6	786.79 (13.9
622.12 (13.2			
	676.84 (13.3	725.87 (13.2	787.26 (13.2
625.87 (13.0	677.84 (13.2	726.85 (13.8	788.25 (13.2
627.93 (13.8	677.95 14.8	727.80 (12.9	788.79 (13.2
628.91 (13.8	678.88 (13.0	729.79 (13.2	789.66 (13.3
629.89 (14.3	682.87 (12.2	730.83 (12.9	789.81 (13.2
630.92 (14.3	684.84 (12.9	733.91 (13.8	791.80 (13.8
630.97 15.3	689.89 (13.2	734.84 (13.7	792.25 (13.2
631.88 (14.3	690.22 (13.3	735.92 (12.9	792.76 (13.8
632.88 (14.3	690.98 (13.8	737.84 (13.2	793.76 (13.8
633.89 (14.5	691.82 (13.5	739.25 (13.2	796.60 (13.3
634.1 (13.5	692.25 (13.7	741.22 (13.2	797.22 (13.8
635.00 (13.8		744.86 (13.2	797.77 (12.4
635.80 (13.8		744.86 13.2	798.26 (13.2
636.06 (13.7	692.89 (13.9	745.77 13.0	799.25 (13.2
636.93 (13.2	693.23 (13.3	745.79 12.7	800.25 (13.9
637.86 (13.0	693.89 (13.3	746.78 13.5	801.25 (13.2
637.89 13.6?	694.23 (13.3	746.80 13.6	802.77 (12.2
638.92 (13.2	694.86 (13.2	746.80 (13.2	803.20 (13.2
639.92 (14.3	695.84 (13.2	747.78 (13.2	804.78 (12.9
640.90 (13.9	696.21 (13.7	747.80 (13.5	805.80 (13.9
641.90 (13.8	696.88 (13.3		
643.94 15.8	697.85 (13.2	748.88 (14.3?	806.78 (12.9
644.87 (13.8	698.90 (13.7	749.79 14.0?	806.79 (12.6
645.89 (13.8	699.24 (13.3	749.87 (13.3	810.02 13.6
646.88 (13.2	699.93 (13.3	750.81 (13.2	811.26 13.0
647.87 12.9	700.88 (13.2	751.86 (13.2	811.79 13.4
648.0 12.6	701.20 (13.7	752.87 (13.9	813.64 (13.9
648.92 12.7	701.98 (13.8	753.82 (13.2	814.26 (13.2
650.90 (12.9	702.80 (13.5	754.19 (13.3	816.94 (13.2
651.0 (13.8	703.89 (13.5	754.79 (13.9	818.26 (13.2
651.87 (13.1	704.89 14.8	756.22 (12.2	818.81 (13.8
652.85 (12.6	705.23 (13.3	760.82 (13.9	819.24 (13.8
653.89 (12.2	706.90 (13.0	762.79 (13.0	820.25 (13.2
655.87 (13.2	710.79 (13.5	763.78 (12.7	820.78 (12.3
656.88 (13.2	711.81 (13.7	764.84 (13.7	821.64 (13.3
657.92 (13.8	712.83 (13.2	766.25 (13.2	825.78 (13.2
659.95 15.7	713.80 (12.9	766.78 (13.0	826.25 (13.2
660.87 (14.3	715.80 (13.2	767.25 (13.2	827.23 (13.8
661.85 (13.2	716.91 (13.8	770.22 (13.2	828.18 (13.8
662.91 (13.5	717.81 (13.2	774.77 (12.9	828.57 (13.9
663.96 14.9	718.79 (12.9	775.78 (13.9	829.22 (14.5
	719.20 (13.3	775.78 (13.9	830.24 (13.8
		776.75 (13.8	833.09 (12.7

TABLE 2 (cont).

<u>TU Men.</u> 044576	<u>TU Men.</u> 044576	<u>TU Men.</u> 044576	<u>AQ Eri.</u> 050104
2444000+	2444000+	2444000+	2442000+
833.78 (12.9	885.86 (13.9	939.18 13.2	859.23 (13.0
834.19 (12.7	886.12 (13.7	939.36 13.5	873.95 (13.0
836.95 (13.8	887.18 (13.2	940.00 13.7	888.93 (13.0
837.93 (13.2	887.90 (13.2	940.19 13.6	889.91 (13.0
839.99 (13.8	892.81 (13.7	940.26 (13.3	892.90 (13.0
842.23 (13.2	894.85 (13.9	940.90 (13.2	898.89 13.0
843.16 (13.8	895.85 (13.9	941.11 (13.8	909.86 (13.0)AQ visible
843.85 (13.2	896.91 (13.8	941.32 ' ' ^	914.86 (13.0 AQ visible
844.80 (12.7	897.86 (13.9	941.87 (13.8	
845.04 (13.8	898.91 (13.7	941.88 (13.8	2443000+
846.15 (13.8	901.33 (13.7	941.88 14.1?	075.99 (13.0
847.85 (13.2	901.90 (13.8	941.90 (13.2	098.96 (13.0
848.91 (13.8	903.03 14.8	942.90 (13.9	103.1 (15.0
849.23 (13.2	903.99 (13.8	944.14 (13.2	103.96 (13.0
850.23 (13.7	904.90 (13.9	944.86 (13.8	122.94 (13.0
851.86 (13.2	905.87 (13.2	945.27 (13.7	124.92 (13.0
852.24 (13.2	906.26 (13.7	946.91 (13.2	125.97 (13.0
853.24 (13.2	906.89 (13.7	948.9 (14.5	126.96 (13.0
854.06 (13.2	907.88 (13.2	950.15 (12.9	128.93 (13.0
854.85 (13.2	908.28 (13.7	950.90 (13.4	130.96 13.4
855.87 (12.2	908.88 (13.2	951.90 (13.7	131.97 13.8
856.21 (13.2	909.89 (13.2	952.29 (13.3	132.0 (15.0
857.23 (13.2	910.32 (13.3	952.89 (13.2	136.01 (13.0
858.20 (13.2	910.87 (13.2	953.88 (13.9	136.92 13.2?
859.09 (13.2	911.94 (13.9	954.10 (13.7	137.95 (13.0
863.15 (12.5	912.26 (13.7	955.95 (13.9	138.96 (13.0
864.82 (13.9	912.88 (13.9	956.90 (13.2	139.92 (13.0
865.85 (13.2	913.87 (13.9	957.11 (13.7	139.97 13.0
867.83 (13.2	914.12 14.8	958.88 (13.9	140.97 12.8
868.84 (13.2	915.50 (13.9	960.12 (13.8	140.99 12.5
869.27 (13.8	918.87 (13.0	960.92 (13.8	141.93 12.7
869.93 (13.9	921.98 (13.2	962.88 (13.2	142.96 13.0
870.91 (13.2	924.03 14.9	963.20 (13.9	141.99 12.7
871.63 (13.3	924.93 (13.8	963.94 (13.9	143.03 13.2
872.06 (13.9	925.85 (13.8	964.21 (13.7	147.99 (13.0
872.92 (13.8	926.89 (12.9	964.92 (13.8	149.96 13.7
873.11 (13.8	928.97 (13.8	964.93 (13.2	150.93 14.0
874.03 (13.7	929.87 (13.9	965.09 13.8?	151.96 (13.0
875.83 (13.9	930.87 (13.5	965.91 (13.9	155.98 (13.6
876.87 (13.9	931.86 (13.9	966.91 (13.2	157.92 (13.5
877.06 15.0	932.00 15.5	967.00 15.7	160.95 13.5
877.82 (13.9	932.89 (13.7	968.92 (13.9	161.94 (13.0
878.05 (13.7	933.19 (13.7	970.89 (14.0	162.07 (13.0
878.91 (13.2	933.90 (13.9		162.93 (13.0
879.92 (13.8	934.87 (13.8		163.99 (13.5
880.94 (13.2	935.19 (13.7		163.99 14.0
881.15 (13.2	935.89 (12.9		165.95 (13.5
883.95 (13.2	937.13 12.3		166.00 (13.5
884.81 (13.8	937.16 12.2		167.05 (13.5
885.15 (13.2	938.17 12.7		168.94 13.5?
	938.38 12.9		169.95 13.5?

TABLE " (cont)

<u>AQ Eri.</u> <u>050104</u>	<u>AQ Eri.</u> <u>050104</u>	<u>AQ Eri.</u> <u>050104</u>	<u>AQ Eri.</u> <u>050104</u>
2443000+	2443000+	2443000+	2443000+
169.96 (13.5	253.94 (13.0	510.93 (13.0	581.84 (13.0
170.96 (13.5	255.91 (13.0	512.98 (11.0	582.84 (13.0
170.96 13.5?	256.91 (12.5	514.95 (13.0	583.82 (13.0
171.95 (13.5	260.90 (13.0	515.99 (11.0	585.85 (13.0
172.95 (13.5	263.88 (13.0	517.93 (13.0	588.83 (13.0
174.04 (13.5	270.86 (13.0	518.90 (13.0	588.83 (13.0
174.95 13.5?	271.85 (12.5	519.98 (11.0	689.83 (13.0
174.96 (13.5	274.84 13.6	520.89 (13.0	590.87 (13.0
176.96 (13.5	281.98 (13.0	521.92 (13.0	593.80 (13.0
177.99 (13.5	283.84 (13.8	523.04 (13.0	594.89 (13.0
180.96 (13.5	405.13 (13.5	523.89 (13.0	595.9 (13.5
181.97 (13.5	412.97 (13.5	527.00 (11.0	599.83 (13.0
182.94 (13.5	430.03 (13.0	530.91 (13.0	600.91 (13.0
183.98 (13.5	434.99 (13.0	531.99 (13.0	602.91 (13.0
184.96 (13.5	437.08 (13.0	534.92 (13.0	603.93 (13.0
185.93 (13.5	448.96 (13.0	535.88 (13.0	604.83 (13.0
187.95 (13.5	454.93 (13.0	536.90 (13.0	609.91 (13.0
188.92 (13.5	457.93 (13.0	537.89 (13.0	610.81 (13.0
189.95 (13.5	459.09 (13.0	539.95 (13.0	611.92 (13.0
190.94 (13.5	460.03 (13.5	540.98 (13.5	612.92 (13.0
191.86 (13.0	462.04 (13.0	541.99 (13.5	614.89 (13.0
192.97 (11.0	462.91 (13.0	542.89 (13.0	615.80 (13.0
193.94 13.6?	463.92 (13.0	544.92 (13.0	622.85 (13.0
193.98 (13.6	465.03 (13.0	545.94 (13.0	630.90 (13.0
196.97 (11.0	468.95 (13.0	546.94 (13.0	637.97 (13.0
197.94 (13.5	470.03 (13.0	547.94 (13.0	733.26 (14.0
~~209.86~~ (13.5	474.87 (13.5	548.00 (14.2	735.36 (14.0
207.93 (13.5		548.89 (13.0	754.18 (13.0
209.83 12.5	475.93 (13.0	549.86 (13.0	762.25 (13.0
210.93 (13.5	476.88 (13.0	550.90 (13.0	768.27 (13.0
	479.98 (13.5		
211.83 (13.5	480.87 (13.0	551.88 (13.0	779.08 (13.0
212.91 (13.5	481.88 (13.0	554.97 (13.0	785.14 (13.0
213.94 (13.0	482.93 (13.0	556.91 (13.0	788.19 (13.5
214.94 (13.0	484.01 (13.5	557.90 (13.0	798.18 (13.0
215.90 (13.5	485.95 (13.0	558.91 (13.0	799.10 (13.0
216.93 (13.0	486.97 (14.0	560.87 (13.0	805.22 (14.0
217.93 (13.5	487.90 (13.0	563.91 (13.0	806.18 (13.0
218.94 (13.0	489.00 (11.0	565.87 (13.0	810.16 (13.0
219.90 (13.0	489.93 (13.0	567.0 b16.5	810.95 (13.0
220.90 (13.0	491.00 (13.0	567.85 *13.0	812.93 (13.0
221.94 (13.5	492.98 (13.0	568.94 (13.0	817.94 (13.0
223.93 (13.5	494.90 (13.0	569.88 (13.0	818.18 (13.5
224.90 (13.5	495.89 (13.0	572.92 (13.0	819.95 (13.0
225.90 (13.5	498.91 (13.0	573.93 (13.0	822.13 (13.0
226.90 (13.5	501.00 (13.0	575.9 (13.5	829.93 (13.0
229.92 (13.0	503.94 (13.0	576.93 (13.0	830.88 (13.0
230.85 (13.0	504.93 (13.0	577.9 (13.5	831.95 (13.0
242.97 (13.0	505.91 (13.0	578.85 (13.0	832.95 (13.0
244.90 (13.0	506.89 (13.0	579.85 (13.0	834.97 (13.0
246.90 (11.0	509.89 (13.0	580.83 (13.0	838.89 (13.0
			839.85 (13.0

TABLE 2 (cont)

AQ Eri. 050104	AQ Eri. 050104	AQ Eri. 050104	AQ Eri. 050104
2443000+	2443000+	2443000+	2444000+
841.02 (13.0	901.03 12.7	953.92 (13.0	175.16 (13.6
841.92 (13.0	901.07 12.5	954.91 (13.0	178.08 (13.0
843.88 (13.0	901.87 13.5	955.03 (13.6	180.05 (13.0
844.92 (13.0	901.90 13.5	956.01 (13.6	181.15 (13.0
845.89 (13.0	902.07 13.4	958.02 (13.6	184.92 (13.0
847.95 (13.0	902.96 13.8	958.93 (13.0	186.12 (13.8
848.92 (13.0	903.03 13.5	959.97 (13.6	187.00 (13.0
849.94 (13.0	903.06 13.5?	960.82 (13.0	188.12 (13.8
852.90 (13.0	903.92 13.8	961.83 (13.6	190.06 (13.0
860.91 (14.0	903.95 13.8	963.81 (13.6	190.92 (13.8
		965.99 (13.6	192.08 (13.8
861.89 (13.0	904.03 14.2	967.97 (13.6	193.14 (13.8
863.93 (13.0	904.88 (13.0	968.98 (13.6	193.93 (13.7
864.88 (13.0	906.90 13.2?	975.80 (12.6	194.96 (13.8
865.92 (14.5	906.95 14.4	977.86 (13.0	197.13 (13.8
867.06 (14.0	907.03 14.2	978.79 (13.0	198.97 (13.0
868.05 (13.5	907.06 13.8	979.89 (13.0	200.94 (13.5
869.91 (14.5	908.11 13.5?	980.79 (13.0	202.12 (13.9
870.91 (14.0	909.03 13.5?	981.86 (13.0	202.89 (13.5
871.92 (14.5	909.88 13.5	982.81 (13.0	203.89 (13.2
872.94 (13.0	910.02 13.6	986.80 (13.4	204.95 (13.0
			208.33 (13.9
873.17 (14.0	910.93 (13.0	988.81 (13.0	208.91 (13.5
874.08 (13.0	911.03 (13.0	989.79 (13.0	209.89 (12.6
874.99 (13.0	912.98 (13.0	991.78 (13.0	211.86 (12.8
875.94 (13.0	913.88 (13.0	993.81 (13.0	215.08 (13.7
876.92 (13.0	914.89 (13.0	995.78 (13.0	216.07 (13.8
877.03 (14.0	917.15 (13.6	996.78 (13.0	217.12 (13.7
877.97 (13.0	817.91 (13.8		
878.14 (14.0	920.89 (13.5	2444000+	217.95 (13.0
879.01 (13.0	922.98 (13.0	042.10 (13.0	218.10 (13.7
879.89 (13.0	923.02 (13.6	076.32 (13.0	220.08 (13.8
880.89 (13.0	924.86 (13.5	082.22 (13.0	221.10 (14.5
882.19 (13.0	925.94 (13.5	086.36 13.9	221.94 (13.5
884.85 (13.0	926.91 (13.8	089.39 (13.0	222.11 (13.8
887.93 (13.0	928.03 (14.0	102.25 (13.0	223.08 (13.8
888.92 (13.0	930.87 (13.2	107.35 (13.0	223.89 (14.0
890.05 (14.4	932.06 (14.0	117.32 (15.7	224.11 (13.8
890.89 (13.0	933.01 (14.0	131.17 (13.0	224.89 (13.5
891.88 (13.0	933.85 (13.0	139.17 (13.0	225.98 (13.0
893.89 13.7	934.02 (14.0	143.09 (13.0	227.07 (15.3
894.03 13.2	935.01 (13.6	145.23 (13.7	227.92 (14.0
894.88 14.0	936.85 (13.6	153.16 (13.0	228.92 (14.4
894.94 (13.0	937.88 (13.4	159.19 (13.8	229.09 (15.3
894.99 (13.0	938.00 (13.6	161.99 (12.4	230.12 (13.7
895.03 14.0?	939.0 (14.0	163.04 (13.0	230.92 (14.0
896.94 (13.0	939.99 (13.0	163.04 13.0	231.12 (13.8
898.11 (14.0	940.92 (13.0	169.00 13.2	232.13 (13.8
898.95 (13.0	948.02 (13.0	170.01 13.2	233.20 (13.7
899.03 14.0?	948.99 (13.6	173.00 (13.0	234.21 (13.7
899.07 14.0	950.99 (13.6	172.03 (13.0	234.87 (13.2
899.97 12.6	951.90 (13.0	173.02 (13.8	235.88 (13.5
900.03 12.6	952.96 (13.0	174.16 (13.0	238.08 (13.0

TABLE 2 (cont)

<u>AQ Eri.</u> <u>050104</u>	<u>AQ Eri.</u> <u>050104</u>	<u>AQ Eri.</u> <u>050104</u>	<u>AQ Eri.</u> <u>050104</u>
2444000+	2444000+	2444000+	2444000+
240.86 (12.3	292.85 (13.0	357.80 (12.6	583.04 (13.5
241.87 (13.2	293.86 (13.0	361.81 (13.0	584.05 (13.0
242.89 (13.0	295.90 (13.0	362.80 (13.0	585.12 (15.3
243.92 (14.0	296.87 (13.0	366.79 (12.6	587.15 (15.3
245.04 (13.7	299.02 (13.0	367.81 (13.5	588.11 (15.3
246.02 (13.0	300.94 (13.0	368.77 (12.6	589.25 (13.7
246.96 (13.0	301.85 (13.5	369.78 (12.5	590.09 (13.0
247.98 (13.0	304.90 (13.0	456.26 (13.0	591.26 (13.7
249.07 (13.7	305.98 (13.0	459.19 (13.0	593.89 (13.0
250.10 (13.7	307.01 (13.5		596.94 (13.0
251.11 (13.7	307.86 (13.5	460.25 (13.0	597.98 (13.0
252.12 (13.7	308.85 (13.5	461.21 (13.0	597.98 (13.0
252.98 (13.0	309.86 (13.5	462.15 (13.0	598.04 (13.0
253.88 (13.5	310.88 (13.5	466.19 (13.0	598.89 13.5
255.07 (15.3	311.93 (13.0	481.22 (13.0	598.92 13.5
256.14 (13.7	313.91 (13.0	482.13 (13.0	598.97 13.3
256.94 (13.0	314.95 (13.0	485.13 (13.0	599.95 (13.0
257.07 (14.9	315.84 (13.5	488.20 (13.0	599.99 (13.0
258.10 (13.7	316.90 (13.5	490.18 (13.0	600.03 13.5
258.99 (13.0	317.91 (13.0	491.10 (13.0	601.09 (13.5
	318.94 (13.0	494.14 (13.0	601.11 (13.7
261.07 (13.5	319.86 (13.5	495.12 (13.0	602.00 (13.5
261.99 (13.0	320.95 (13.0	496.13 (13.0	602.99 (13.5
263.08 (14.5	321.95 (13.0	502.18 (13.0	603.99 (13.5
263.88 (13.6	322.86 (13.5	503.14 (13.0	604.89 (13.0
264.98 (13.0	324.83 (13.0	510.17 (13.0	605.90 (13.0
268.88 (12.8	325.88 (13.2	515.20 (13.0	606.00 (13.8
269.97 (12.6	327.81 (13.0	516.0 (12.8	607.04 (13.0
270.88 (13.0	330.04 (13.0	518.1 13.8	607.89 (13.5
271.90 (13.0	331.97 (13.0	522.1 (15.5	608.90 (13.5
273.02 (13.5			
274.02 (13.7	332.89 (13.5	524.33 (14.0	609.10 (13.7
275.02 (13.8	333.85 (13.5	540.97 (13.0	610.00 (13.5
275.95 (13.5	333.98 (13.7	545.95 (13.0	610.14 (13.7
277.03 (13.7	334.85 (13.5	550.96 (13.0	611.13 (13.7
278.07 (13.7	335.85 (13.0	553.99 (13.0	612.16 (14.0
278.86 (13.5	336.84 (13.5	554.85 (13.0	612.88 (13.5
279.93 (13.5	337.09 (14.5	556.02 (13.0	613.89 (13.5
280.88 (14.0	337.82 (13.5	557.00 (14.0	614.22 (13.7
281.86 (13.0	338.82 (13.5	558.05 (13.0	615.07 (14.0
282.00 13.4	339.80 (13.2	564.0 (13.5	
282.04 13.5	340.97 (13.5	566.88 (12.5	615.98 (13.0
282.97 (13.0	341.81 (13.0	567.87 (13.0	616.98 (13.0
283.05 14.0	342.89 (13.0	569.96 (13.0	618.21 (13.7
284.0 15.7	343.95 (13.0	570.00 (13.0	618.93 (13.5
284.04 (13.8	344.79 (12.8	575.15 (14.0	619.94 (14.5
285.04 (13.8	345.93 (13.0	576.96 (13.7	625.87 (13.2
286.06 (14.0	346.79 (12.8	577.11 (15.3	627.89 (13.2
287.94 (13.0	350.89 (13.0	578.11 (14.0	628.00 (13.5
288.97 (13.0	351.88 (13.0	579.24 (14.0	628.93 (13.0
289.99 (13.5	352.79 (12.6	580.11 (14.0	629.91 (14.0
	353.82 (12.5	582.14 (14.0	630.95 (13.7
			631.90 (13.0

TABLE 2 (cont)

<u>AQ Eri.</u> 050104	<u>AQ Eri.</u> 050104	<u>AQ Eri.</u> 050104	<u>AQ Eri.</u> 050104
2444000+	2444000+	2444000+	2444000+
632.89 (13.7	701.96 (13.5	876.21 (13.0	942.94 (13.5
633.87 (13.4	702.81 (13.5	877.10 (13.0	944.15 (13.0
634.05 (15.3	703.94 (13.5	878.08 (13.3	945.26 (14.1
635.13 (13.5	704.81 (13.0	881.18 (13.5	946.28 (13.7
636.03 (13.5	705.93 (13.5	882.29 (14.5	946.96 (13.0
637.90 (13.0	707.24 (12.5	883.50 12.8?	948.96 (13.0
638.89 (13.0	710.92 (13.5	885.17 (13.5	949.88 (12.5
639.89 (13.0	715.90 (13.5	886.20 (13.5	950.92 (13.0
641.93 (13.0	716.91 (13.5	887.19 (13.0	953.03 (13.0
642.99 (13.0	719.20 (12.5	899.25 (13.8	954.09 (13.7
644.04 (13.0	719.82 (13.0	901.27 (13.7	955.98 (14.0
644.98 (13.5	721.91 (13.0	904.14 (13.5	957.10 (13.8
646.05 (14.5	723.22 (12.5	906.09 (13.8	958.29 (12.5
646.98 (13.5	723.89 (13.0	908.26 (14.0	958.90 (14.0
647.94 (13.5	725.80 (13.0	909.17 (13.5	960.00 (13.5
651.85 (13.2	726.88 (13.5	910.38 (12.5	960.98 (13.5
652.86 (12.6	727.89 (13.0	911.16 (13.0	962.55 (12.5
656.85 (13.2	734.78 (12.8	912.1 (15.0	963.98 (14.0
657.92 (13.8	746.79 (13.0	914.11 (13.0	964.17 (13.7
659.84 (13.5	749.78 (13.0	915.53 11.5	965.04 (13.5
660.88 (13.2	785.26 (13.0	921.98 (13.0	965.92 (14.0
661.01 (13.5	788.26 (13.0	924.10 (12.5	966.11 (15.3
662.06 (13.0	797.23 (13.0	924.88 (13.0	966.98 (13.5
665.00 (13.8	812.25 (13.0	924.94 13.5	968.98 (13.5
666.85 (13.5	819.24 (13.4	924.94 13.5	970.91 (14.0
667.85 (13.2	827.24 (13.8	925.13 13.4	971.12 (15.3
668.97 (13.0	828.22 (13.0	925.92 13.7	
669.93 (13.5	829.23 (13.0	926.14 13.7	
669.93 (13.0	830.24 (13.8	927.12 13.9	
669.96 12.8	834.20 (13.0	928.90 (13.0	
670.33 (12.5	837.24 (13.0	928.90 (14.0	
671.02 13.7	843.17 (13.5	929.95 (13.0	
671.3 (12.5	844.25 (13.0	930.14 (13.5	
673.88 (13.0	846.16 (13.5	930.93 (13.5	
675.3 (12.5	847.24 (13.0	931.91 (13.0	
676.3 (12.5	848.58 (12.5	932.13 (14.0	
677.3 (12.5	849.24 (13.0	932.88 (13.4	
677.85 13.3	852.23 (13.5	933.19 (14.0	
678.89 (12.6	853.24 (13.0	933.88 (13.4	
688.90 (13.5	855.07 (13.0	935.21 (13.8	
690.22 (12.5	857.25 (13.5	935.34 13.2	
690.92 (13.0	858.21 (13.5	935.90 (13.0	
691.82 (13.5	859.22 (13.5	936.42 13.0	
692.81 (13.5	868.12 (13.0	937.14 (13.0	
694.23 (12.5	869.19 (13.0	937.17 (14.0	
694.81 (13.2	870.61 (12.5	938.16 (14.0	
695.83 (13.0	871.16 (13.7	939.25 (12.5	
696.83 (13.0	872.22 (13.5	940.16 (14.0	
698.81 (13.2	873.20 (13.5	941.28 (14.0	
699.81 (13.5	874.21 (13.0	941.91 (13.5	
700.96 (13.5	874.29 (13.7	941.91 14.0?	

TABLE 2 (cont).

<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100
2436000+	2437000+	2438000+	2438000+
816.22 11.8	524.26 (12.7	001.09	699.17 (13.4
818.27 11.7	526.25 (13.4	014.98 (13.4	700.14 (13.4
819.25 11.7	527.25 (13.4	016.99 (13.4	706.16 (13.4
820.22 11.9	529.26 (13.4	018.98 (13.4	709.16 (13.4
821.23 12.1	530.25 (13.4	022.00 (13.4	710.11 (13.4
823.23 12.7	558.21 (13.4	023.09 (13.4	734.15 (13.4
825.23 (13.4	559.16 (13.4	027.03 (13.4	739.14 (13.4
843.21 (13.4	561.22 (13.4	028.00 (13.4	755.97 (13.4
846.18 (13.4	580.17 (13.4	028.95 (13.4	757.00 (13.4
848.20 (13.4	581.17 (13.4		
		034.11 (13.4	758.12 (13.4
854.16 (13.4	587.17 (13.4	042.92 (13.4	760.12 (13.4
880.10 (13.4	589.17 (13.4	045.01 (13.4	762.02 (13.4
929.99 (13.4	590.16 (13.4	045.95 (13.4	764.96 (13.4
954.02 (13.4	613.13 (13.4	047.99 (13.4	766.13 (13.4
958.01 (13.4	620.09 (13.4	048.97 (13.4	770.98 (13.4
971.06 (13.4	639.01 12.2	051.95 (13.4	785.94 (13.4
988.92 (13.4	641.00 13.8	062.95 (13.4	788.92 (13.4
989.92 (13.4	642.01 (13.4	053.98 13.6	794.93 (13.4
996.91 (13.4	644.09 (13.4	055.98 11.5	796.94 (13.4
	650.07 (13.4		
2437000+		072.89 (13.4	798.93 (13.4
019.89 (13.4	660.97 (13.4	083.95 (13.4	799.97 (13.4
041.83 (13.4	661.98 (13.4	085.91 (13.4	810.96 (13.4
174.25 (13.4	663.00 (13.4	089.88 (13.4	812.97 (13.4
202.20 (13.4	671.04 (13.4	100.86 (13.4	816.90 (13.4
225.15 (13.4	673.14 (13.4	102.87 (13.4	818.91 (13.4
235.18 (13.4	674.95 (13.4	104.89 (13.4	821/90 (13.4
239.15 (13.4	691.95 13.9	108.85 (13.4	825.90 (13.4
257.14 (13.4	695.90 (13.4	109.86 (13.4	839.87 (13.4
	696.93 (13.4	117.88 (13.4	843.87 (13.4
259.11 (13.4	697.98 (13.4	124.86 (12.7	847.86 (13.4
262.14 (13.4	700.95 (13.4	145.82 (13.4	847.86 (13.4
286.08 (13.4	704.99 (13.4	167.78 (13.4	851.90 (13.4
288.99 (13.4	705.99 (13.4	167.78 (13.4	853.91 (13.4
289.98 (13.4	718.90 (13.4	315.15 (13.4	854.91 (13.4
313.00 (13.4	723.91 (13.4	350.15 (13.4	856.91 (13.4
313.97 (13.4	729.88 (13.4	351.10 (13.4	861.87 (13.4
323.00 11.8	733.91 (13.4	384.97 (13.4	
324.95 13.2	747.86 (13.4	386.09 (13.4	2439000+
337.94 (13.4	753.84 (13.4		
		402.06 (13.4	003.23 (13.4
346.95 (13.4	762.83 (13.4	403.01 (13.4	008.24 (13.4
349.90 (13.4	779.81 (13.4	404.99 (13.4	065.13 (13.4
350.90 (13.4	946.17 (13.4	416.97 (13.4	122.99 (13.4
367.89 (13.4	963.15 (13.4	430.91 (13.4	138.96 (13.4
369.90 (13.4	972.13 (13.4	433.92 (13.4	140.95 (13.4
376.89 (13.4	973.13 (13.4	649.23 (13.4	142.95 (13.4
377.84 (13.4	999.00 (13.4	651.21 (13.4	150.95 (13.4
378.85 (13.4		671.15 (13.4	170.96 12.1
392.82 (13.4		678.20 (13.4	173.89 12.9
396.85 (13.4	679.19 (13.4		181.96 (13.4
404.82 (13.4			

TABLE 2 (cont).

<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100
2439000+	2439000+	2440000+	2440000+
201.90 (13.4	859.98 (13.4	241.94 (13.4	625.96 (13.4
203.87 (13.4	874.98 13.9	242.97 (13.4	626.95 (13.4
205.87 (13.4	875.99 m13.9	248.94 (13.4	627.95 (13.4
207.86 (13.5	876.96 13.8	262.90 (13.4	631.92 (13.4
208.86 (13.4	877.95 14.1?	366.95 (13.4	645.94 (13.4
231.82 (13.4	885.94 (13.9	269.90 (13.4	647.93 (13.4
232.82 (13.4	891.92 (13.4	270.91 (13.4	648.94 (13.4
413.18 (13.4	893.91 (13.4	272.91 (13.4	650.86 (13.4
414.18 (13.4	904.92 (13.4	273.93 (13.4	655.91 (13.4
418.19 (13.4	905.93 (13.4	274.97 (13.4	660.90 (13.4
448.14 (13.4	906.89 (13.4	276.90 (13.4	666.85 (13.4
452.12 (13.4	908.90 (13.4	281.87 13.8?	673.85 (13.4
498.00 (13.4	910.91 (13.4	282.86 (13.4	674.87 (13.4
505.94 (13.4	911.89 (13.4	286.87 (13.4	680.86 12.1
508.95 (13.4	916.93 (13.4	288.85 (13.4	681.85 11.8
517.95 (12.7	917.92 (13.4	289.85 (13.4	683.92 13.6
518.94 (13.4	918.90 (13.4	291.86 (13.4	684.92 (13.4
519.90 (13.4	924.89 (13.4	295.86 (13.4	708.81 (13.4
521.97 (13.4	938.89 (13.4	303.86 (13.4	810.25 (13.4
524.96 (13.4		305.85 (13.6	836.22 (13.4
526.96 (13.4	939.86 (13.4	316.83 (13.4	842.19 (13.4
527.93 (12.7	941.90 (13.4	317.83 (13.4	856.20 (13.4
528.96 (13.4	942.90 (13.4	320.87 (13.4	870.14 (13.4
531.97 (13.4	945.84 (13.4	322.82 (13.4	884.10 (13.4
532.87 (13.4	958.83 (13.4	323.94 (11.9	890.18 (13.4
534.93 (13.4	962.86 (13.4	324.84 (13.4	901.16 (13.4
537.95 (13.4	966.83 (13.4	338.84 (13.4	912.12 (13.4
553.89 (13.4	973.82 (13.4	346.82 (13.4	914.12 (13.4
560.90 (13.4	974.84 (13.4	510.16 (13.4	916.15 (13.4
562.88 (13.4	981.81 (13.4	512.17 (13.4	918.15 (13.4
563.90 (13.4	2440000+	513.19 (13.4	921.13 (13.4
566.94 (13.4		528.15 (13.4	925.97 (13.4
567.90 (13.4	129.21 (13.4	533.15 (13.4	936.94 (13.4
575.84 (13.4	130.20 (13.4	534.12 (13.4	939.91 (13.4
576.83 (13.4	148.19 (13.4	538.13 (13.4	940.94 (13.4
582.86 (13.4	151.15 (13.4	541.13 (13.4	942.96 (13.4
584.86 (13.4	157.15 (13.4	561.06 (13.4	946.93 (13.4
589.82 (13.4	160.12 (13.4	562.07 (13.4	947.99 (13.4
592.84 (13.4	162.17 (13.4	569.12 (13.4	948.97 (13.4
595.82 (13.4	179.15 (13.4	577.13 (13.9	949.94 (13.4
616.81 (13.4	183.15 (13.4	581.95 (13.4	955.96 (12.6
806.13 14.0?		582.99 (13.4	960.08 (13.0
807.16 (13.4	187.09 (13.4	584.91 (13.4	967.94 (13.0
820.16 (13.4	188.15 (13.4	589.00 (13.4	968.93 (13.0
836.15 (13.4	192.15 (13.4	596.00 13.4	969.90 (13.0
833.14 (13.4	201.96 (13.4	597.02 (13.4	970.92 (13.0
834.14 (13.4	209.10 (13.4	597.98 (13.4	975.10 13.9
847.98 (13.4	211.99 (13.4	600.99 (13.4	975.92 (13.0
850.97 (13.4	230.00 (13.4	603.11 (13.4	976.95 (13.0
854.95 (13.4	233.93 (13.4	614.98 (13.4	980.95 (13.0
856.97 (13.4	237.00 (13.4	618.95 (13.4	985.98 (13.0
	240.93 (13.4	620.96 (13.4	997.87 (13.0
	241.94 (13.4	622.92 (13.4	995.85 (13.0
			996.89 (13.0
			998.91 (13.0
			999.94 (13.4

TABLE 2 (cont).

<u>CW Mon.</u> 063100	<u>CW Mon</u> 063100	<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100
2441000+	2441000+	2441000+	2441000+
000.95 (13.4	381.07 (13.6	685.08 (13.4	789.88 (12.7
001.95 (13.0	382.91 (13.4	685.94 (13.4	790.87 (12.7
012.88 (13.0	387.88 (13.4	686.95 (13.6	793.88 (13.6
026.87 (13.0	388.95 (13.4	687.92 (13.6	794.86 (13.6
030.88 (13.0	389.90 (13.4	688.92 (13.6	795.91 (13.6
031.12 (13.0	390.90 13.3	691.92 (13.4	796.87 (13.6
034.89 (13.0	391.94 12.7	694.04 (13.6	801.7 12.5
037.89 (13.0	394.88 13.1	695.09 (13.4	802.86 (13.6
038.85 (13.0	395.89 13.4	709.93 (13.4	803.86 (13.6
065.82 (13.0	407.84 (13.4	710.96 (13.4	804.86 (13.6
066.81 (13.0	408.83 (13.4	711.95 (13.6	805.86 (13.6
087.78 (13.0	416.83 (13.4	716.94 (13.6	806.86 (13.6
093.81 (13.0	422.82 (13.4	717.97 (13.6	807.88 (12.7
224.18 (13.0	423.85 (13.4	718.92 (13.4	808.86 (12.7
249.14 (13.0	437.80 (12.7	719.95 (13.6	814.88 (12.7
251.14 (13.0	545.25 (13.4	720.94 (13.6	815.86 (12.7
254.14 (13.0	546.25 (13.4	721.93 (13.6	816.85 (12.7
256.16 (13.0	548.25 (12.7	723.00 (13.6	817.85 (12.7
268.13 (13.0	549.24 (13.4	724.05 (13.6	820.85 (12.7
278.15 (13.0	552.25 (13.4	734.91 (13.6	828.85 (12.7
		735.91 (13.6	832.84 (12.7
279.11 (13.0	564.22 (13.4		
282.11 (13.0	570.22 (13.4	736.98 (13.4	983.15 (13.4
284.14 (13.0	571.22 (13.4	737.93 (13.6	
285.12 (13.0	577.20 (13.4	738.94 (13.6	2442000+
291.95 (13.0	573.20 (13.4	744.94 (13.6	
295.96 (13.0	578.20 (13.4	745.93 (13.6	006.13 (13.4
296.12 (13.0	580.19 (13.4	746.98 (13.9	009.13 (13.4
300.99 (13.0	581.20 (13.4	747.91 (13.6	018.11 (13.4
302.96 (13.0	590.17 (13.4	748.91 (13.4	051.09 (13.4
304.10 (13.0	591.19 (13.4	749.91 (13.6	059.93 (13.4
307.10 (13.0	595.17 (13.4	750.92 (13.6	060.91 (12.7
311.10 (13.0	603.07 (13.4	752.90 (13.4	064.91 (13.4
319.99 (13.0	605.16 (13.4	756.7 (14.5	067.11 (13.4
320.95 (13.0	608.15 (13.4	758.90 (12.7	067.90 (13.4
323.95 (13.0	611.17 (13.4	761.91 (12.7	069.93 (13.4
325.95 (13.0	619.16 (12.7	762.91 (12.7	075.94 (13.4
326.94 (13.0	638.13 (13.4	763.91 (13.6	076.91 (13.4
328.91 (13.0	640.14 (13.4	766.84 (13.4	077.91 (13.4
331.11 (13.0	653.10 (13.4	767.88 (13.6	078.99 (13.4
332.92 (13.0	655.10 (13.4	768.92 (13.4	091.92 (13.4
335.11 (13.0	667.09 (13.4	769.85 (13.4	095.93 (13.4
335.97 (13.0	673.95 (12.7	771.92 (13.4	096.92 (13.4
339.11 (13.0	674.96 (13.4	772.90 (13.6	097.91 (13.4
342.96 (13.0	675.93 (12.7	773.93 (13.6	102.92 (13.4
350.93 (13.0	676.94 (13.4	774.91 (13.6	103.94 (13.4
351.96 (13.0	677.94 (13.4	775.91 (13.6	105.93 (13.4
359.92 (13.4	679.92 (13.4	776.89 (13.4	107.88 (13.4
360.90 (13.4	680.94 (13.4	778.90 (13.4	121.92 (13.4
362.92 (13.4	681.07 (13.6	779.93 (13.6	124.94 (13.4
364.02 (13.4	681.92 (13.6	780.92 (13.6	129.84 (13.4
372.94 (12.7	682.97 (13.4	786.88 (12.7	130.92 (13.4
373.91 (12.7	683.99 (13.6	788.87 (12.7	132.88 (13.4
			134.89 (13.4
			135.90 (13.4

TABLE 2 (cont)

<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100
2443000+	2443000+	2443000+	2443000+
140.7 12.5	486.98 (13.4	570.93 (13.4	875.89 (13.6
142.7 12.4	506.95 (13.4	571.90 (13.5	877.0 (15.3
138.? 13.8	511.92 (13.4	573.95 (13.4	877.93 (14.0
160.82 (13.4	514.91 (13.4	574.96 (13.4	878.93 (14.0
162.82 (13.4	515.93 (13.4	577.0 15.8	879.91 (14.0
321.12 (13.4	517.95 (13.4	578.88 (13.7	880.89 (13.6
325.13 (13.4	518.93 (13.4	579.85 (14.7	881.89 (13.6
402.99 (13.4	519.91 (13.4	580.83 (14.7	882.91 (13.6
413.92 (13.4	520.91 (13.4	581.92 (13.6	883.92 (13.6
414.92 (13.4			
416.93 13.1	521.91 (13.4	582.85 (13.6	890.10 (13.4
422.90 13.0	523.88 (13.6	583.82 (13.6	890.89 (13.6
423.97 13.0	539.91 (13.4	585.85 (13.4	892.07 (14.0
424.89 13.1	540.91 13.4	587.91 (13.6	894.05 (13.9
425.91 13.2	541.90 13.0	588.93 (13.6	895.04 (13.6
429.? (14.0	544.90 13.0	589.83 (13.6	895.94 (13.6
430.09 (13.4	544.96 12.7	590.87 (13.0	896.93 (13.4
432.94 (13.4	545.90 12.9	593.81 (13.6	898.13 (13.9
445.94 (13.4	545.95 12.6	597.86 (12.7	899.12 (13.0
447.94 (13.4	545.97 12.0	599.83 (12.7	899.97 (13.6
448.85 (13.4	546.89 12.5	601.99 (13.6	900.03 (13.9
452.93 (13.4	546.92 12.4	602.92 (13.9	901.04 (13.9
454.90 (13.4	547.03 12.1	603.80 (14.7	902.07 (13.9
455.90 (13.4	547.90 12.9	604.83 (14.7	903.03 (13.9
462.90 (13.4	548.00 12.2	605.82 (13.4	904.04 (13.9
478.90 (13.4	548.88 11.4?	606.83 (13.4	904.91 (13.4
479.92 (13.4	548.92 12.6	610.82 (14.7	907.04 (13.9
489.94 (13.4	548.93 11.4?	614.91 (13.0	908.11 (13.9
502.84 (13.4	549.15 12.7	615.80 (13.6	909.10 (13.9
505.89 (13.4	549.86 12.7	623.88 (13.4	909.88 (13.6
511.83 (13.4	549.88 12.8	624.81 (13.4	919.93 (13.6
513.83 (13.4	549.89 12.8	627.81 (12.6	922.89 (13.4
752.99 (12.7	549.91 12.6	628.79 (12.7	923.91 (13.4
835.91 (13.4	549.92 12.9	630.81 (13.7	924.91 (13.4
840.86 (13.4	549.92 13.1	633.83 (12.7	926.01 (13.6
859.97 (13.4	549.92 12.8	634.91 (13.4	926.91 (13.4
860.88 (13.4	549.94 12.9	637.82 (12.7	927.96 (13.6
885.81 (13.4	550.89 13.4	639.81 (12.7	928.89 (13.4
	550.92 13.4	642.89 (13.4	930.87 (13.5
2443000+	550.92 13.2	734.39 (13.6	931.86 (13.6
078.0 (14.0			
132.1 (15.3	550.97 13.2	754.19 (12.7	932.06 (13.9
243.9 15.9	551.87 13.1	759.17 (12.7	933.02 (13.9
246.85 (13.4	551.95 13.6	860.97 (13.4	934.03 (13.9
247.84 (13.4	552.92 (13.4	861.90 (13.4	935.07 (13.9
270.82 (13.4	553.01 (13.6	864.88 (13.4	936.06 14.7
405.14 (12.7	553.90 (13.4	867.11 (13.9	936.85 (13.6
462.07 (13.4	557.91 (12.7	868.08 (13.9	937.08 (13.9
480.01 (13.4	558.91 (11.9	870.07 (13.9	938.01 (13.6
480.90 (14.7	560.87 (13.4	871.10 (13.9	939.08 (13.9
481.85 (13.6	565.92 (13.6	872.01 (12.7	948.99 (13.9
484.02 (12.6	567.86 (12.7	872.96 (14.0	951.02 (13.9
		874.10 (13.6	951.98 (14.5
		874.98 (12.7	952.95 (15.3
			953.93 (13.9

TABLE 2 (cont).

<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100
2443000+	2444000+	2444000+	2444000+
954.04 (13.9	222.23 13.4	273.03 (13.6	346.80 (13.4
954.85 (13.4	223.17 12.8	274.03 (13.6	348.85 (13.0
955.95 (13.6	224.15 12.5	274.87 (13.7	350.90 (13.4
956.04 (13.9	225.20 12.5	275.93 (13.6	352.80 (13.0
956.85 (13.4	226.90 12.4	277.05 (13.6	353.83 (12.6
958.03 (13.9	226.93 12.4	278.08 (13.9	357.81 (13.0
958.82 (13.6	226.95 12.4	278.91 (13.6	359.79 (12.6
959.98 (13.9	227.13 12.7	279.93 (13.6	361.82 (13.4
960.82 (13.6	227.14 12.8	280.9 16.2	362.80 (13.4
961.83 (13.6	227.88 13.0	282.06 (13.9	366.79 (13.0
962.96 (13.9	227.89 13.0	283.08 (15.0	367.82 (13.4
964.07 (14.5	227.91 13.2	284.06 (13.9	368.77 (13.0
966.00 (13.9	227.93 13.1	285.05 (13.9	369.75 (13.0
966.94 (13.4	227.94 13.0	286.06 (13.9	370.90 (13.4
967.99 (13.6	228.13 13.3	287.88 (13.4	475.24 (13.4
969.00 (13.4	228.16 13.0	288.97 (13.6	488.22 (13.4
978.79 (13.9	228.93 13.6	289.92 (13.6	489.22 (13.4
979.79 (13.4	228.93 (13.4	291.92 (13.6	494.18 (12.7
980.79 (13.4	228.95 13.8	292.95 (13.6	496.22 (13.4
981.80 (13.6	229.13 (13.4	293.86 (13.0	502.20 (13.4
982.83 (13.4	229.19 13.4	301.85 (13.6	503.19 (12.6
985.96 (13.6	229.89 (13.6	303.87 (13.4	504.19 (13.4
986.86 (13.4	229.93 (14.5	304.89 (13.6	524.33 (13.9
988.80 (13.0	230.16 (13.9	305.90 (13.6	545.12 (13.4
989.79 (13.4	230.93 (14.0	306.84 (13.8	553.14 (13.4
991.95 (13.6	231.14 (14.0	307.91 (13.6	561.14 (13.4
993.81 (13.4	232.16 (14.0	308.85 (13.7	570.98 (13.4
994.97 (13.6	232.99 (13.4	309.89 (13.6	577.16 (15.0
995.96 (13.6	234.98 (13.1	310.95 (13.9	580.18 (13.9
996.79 (13.0	235.93 (13.6	311.93 (13.6	582.16 (13.9
2444000+	237.97 (12.7	313.87 (13.4	582.96 (13.6
009.89 (13.4	241.96 (12.8	314.89 (13.7	584.13 (13.4
012.88 (13.4	243.92 (14.0	315.92 (13.4	585.18 (15.3
015.77 (13.4	244.91 (14.5	317.91 (13.0	587.11 (13.4
135.22 (13.4	245.92 (13.7	318.91 (13.4	588.14 (15.3
141.20 (13.4	246.97 (13.6	319.90 (13.6	597.96 (13.4
142.25 (13.4	247.97 (14.0	320.93 (13.4	598.97 (13.6
144.20 (13.4	248.89 (13.7	324.86 (12.8	599.96 (13.4
	249.16 (13.9	325.82 (13.4	603.91 12.4
	250.11 (13.9	327.81 (13.0	605.90 (13.4
173.29 (13.6	250.89 (13.9	331.97 (12.7	606.00 (13.6
180.09 (12.7	252.13 (13.9	332.89 (13.6	609.12 (13.9
190.06 (13.6	253.95 (13.6	333.84 (13.6	609.90 (14.0
193.22 (13.9	255.11 15.5	333.98 (13.9	610.91 (14.0
199.06 (13.6	255.89 (13.5	336.89 (13.6	612.18 (13.9
303.07 (12.7	257.11 (13.9	337.02 (14.5	612.89 (13.5
202.22 (13.6	258.12 (13.9	337.97 (14.5	613.95 (13.6
204.06 (12.7	258.95 (13.4	339.95 (13.6	615.09 (13.9
217.00 (13.4	260.98 (13.4	340.98 (13.9	618.21 (13.9
219.89 (13.6	261.94 (13.4	342.03 (13.9	619.23 (13.9
220.89 (13.6	263.09 (15.0	342.89 (13.6	625.88 (13.0
221.13 (13.4	263.88 (13.6	343.96 (13.4	627.90 (13.6
222.14 (13.4	264.91 (13.4	344.80 (13.4	628.93 (13.4
	271.89 (12.9	345.94 (13.9	629.91 (14.0

TABLE 2 (cont).

<u>CW Mon.</u> 063100	<u>CW Mon.</u> 063100	<u>BV Pup.</u> 074423	<u>BV Pup.</u> 074423
2444000+	2444000+	2436000+	2443000+
630.95 (13.7	846.24 (12.7	717.83 (13.5	504.0 14.5
631.90 (13.6	847.24 (13.4	720.81 (14.0	512.11 (13.3
632.89 (13.7	848.58 (12.7	725.78 (13.5	520.0 13.5
633.91 (13.6	849.24 (13.4	854.18 (13.5	526.0 14.0
635.14 (13.6	852.23 (12.8		544.17 (14.4
636.05 (13.9	853.24 (13.4	2437000+	545.01 (14.4
636.98 (13.4	853.57 13.6		546.00 (14.4
637.90 (13.6	857.22 (13.4	019.91 (14.0	546.99 (14.4
638.92 (13.4	858.21 (13.4	041.89 (13.5	548.05 (14.1
639.89 (13.6	870.60 (11.9	313.99 (14.0	553.03 (13.6
641.96 (12.7	872.14 (13.7	349.94 13.9	554.9 15.7
		350.90 13.9	
644.92 (13.4	873.20 (13.4	356.08 14.4?	578.1 (14.4
645.89 (13.4	874.21 (13.4	369.91 (14.0	603.0 14.5
647.87 (13.4	878.11 (12.7	378.87 (14.0	608.09 14.3
638.1 (13.6	881.10 (12.7	396.86 (14.0	614.9 14.4
651.85 (12.6	885.17 (13.4	404.87 (13.5	620.0 14.5
656.88 (13.4	887.18 (13.6	455.79 (13.5	627.04 (14.1
657.93 (13.6	901.30 (13.9	460.79 (13.5	628.0 15.3
659.85 (13.5	904.14 (13.4	589.17 (14.0	630.9 14.6
660.89 (13.6	906.28 (13.9	700.97 (13.0	633.05 13.0
662.90 (13.5	908.27 (13.9		634.03 13.0
	912.26 (13.9	2438000+	
663.88 (13.4	928.95 12.0		635.07 13.1
665.00 (13.6		051.97 13.6	637.98 14.2
666.85 (13.6	929.06 (13.1	052.96 13.4	639.01 14.2
667.90 (13.0	930.14 12.6	053.98 13.6	656.95 (14.1
670.0 16.1	931.95 12.2?	700.17 (13.0	665.05 (14.1
671.02 (13.9	931.97 13.0		668.98 (14.1
687.85 (11.9	932.22 12.5	2441000+	733.34 (14.1
691.83 (13.5	933.25 12.8		734.37 (14.1
693.02 (13.6	933.96 13.5	756.7 (14.0	805.23 (14.1
694.82 (13.2	934.15 (12.8		810.25 14.5
695.84 (13.4	934.93 (12.7	2442000+	811.32 14.2
	934.99 14.0		
696.84 (13.0		810.00 14.8	864.1 14.8
697.86 (13.0	935.22 13.9	811.97 14.8	866.07 13.8
698.99 (13.9	937.23 (14.1	819.00 14.9	867.11 13.8
700.87 (13.4	938.22 (14.1	835.? (13.5	868.10 13.7
701.88 (13.4	941.28 (13.9	839.92 14.8	870.09 13.9
702.89 (13.6	941.92 (13.6	844.? (13.5	871.11 14.5
704.81 (13.8	942.93 (13.6	855.? (13.5	872.19 (14.4
710.83 12.0	945.27 (13.9	901.? (13.5	878.16 (14.4
710.88 12.1	948.99 (12.7		880.0 15.3
		2443000+	882.27 14.7
716.85 (12.8	953.94 (13.6		
717.95 (13.4	955.99 (13.6	073.? (13.5	890.0 14.6
719.79 (13.2	956.88 (13.6	078.? (14.0	890.05 13.7
720.02 (12.8	958.91 (13.6	079.? (13.5	891.09 13.8
721.80 (13.2	960.11 (13.4	097.? (13.5	893.13 14.2
723.83 (12.8	960.96 (13.6	143.1 13.8	894.06 14.4
724.82 (13.6	963.99 (13.6	174.0 14.5	895.07 14.5
725.82 (12.8	965.11 (13.6	229.0 14.8	898.14 (14.4
726.86 (13.4	966.17 (15.3	481.0 13.5	899.05 14.7
734.78 (12.8	968.94 (13.4	491.0 14.7	900.04 (14.4
748.77 (13.0	971.18 (15.3	499.0 14.2	901.04 14.6
813.19 (12.7		502.1 14.8	902.08 (14.4
			903.04 (14.4

n TABLE 2 (cont)

<u>BV Pup</u> <u>074423</u>	<u>BV Pup</u> <u>074423</u>	<u>BV Pup.</u> <u>074423</u>	<u>BV Pup/</u> <u>074423</u>
2443000+	2444000+	2444000+	2444000+
904.06 (14.4	006.10 (13.0	244.04 (12.1	318.0 14.5
907.05 14.4	008.9 13.4	245.03 (12.1	319.86 (13.5
908.11 14.2	010.97 13.3	247.0 (13.2	320.89 (13.8
908.12 14.4	011.95 13.6	248.00 (12.1	322.89 (13.0
909.10 14.3	012.9 14.2	249.16 13.4	324.86 (13.5
910.08 14.2	018.95 (14.1	250.14 13.4	325.83 (13.4
912.94 14.6	019.80 (14.1	250.89 13.1	327.82 (13.0
917.16 (14.1	021.98 (14.1	251.15 13.4	330.90 (12.8
923.04 13.3	023.82 (13.7	252.14 13.3	333.87 (13.0
926.02 13.7	023.95 (14.1	253.89 13.1	335.94 (12.1
		253.89 13.5	336.86 (13.0
824.13 13.6	027.79 13.6	254.90 13.4	337.95 (12.1
927.01 13.7	028.80 13.6?	255.12 13.5	338.97 14.8
928.01 14.1	029.83 (13.3	255.91 13.2	339.80 (13.5
930.95 14.7	167.1 15.0	257.10 13.9	340.95 14.9
932.07 14.2	170.15 (13.0	258.10 13.9	341.86 (13.5
933.03 (14.4	173.25 (14.1	260.93 (13.5	342.79 (13.0
934.04 (14.4	175.11 (12.1	263.10 14.9	344.80 13.6?
935.01 (14.4	180.15 (12.1	264.0 15.0	345.84 (13.0
936.18 (14.1	193.25 (14.1	271.88 (13.0	345.95 13.5
937.09 (14.4	194.09 (14.1	272.86 (13.0	346.80 (13.0
938.0 14.4	195.12 (13.0	274.05 (14.1	348.86 (13.5
938.01 (14.1	199.07 (14.4	274.87 (14.1	350.95 15.5
939.07 (14.1	201.15 (13.0	275.06 (13.7	352.79 (13.0
940.01 (13.5	202.18 (13.7	275.93 (14.1	353.83 (13.4
942.00 13.0	204.07 (13.0	277.07 (14.1	354.89 (13.2
951.01 14.2	208.90 (12.1	278.09 (14.1	356.90 (12.6
952.0 14.6	210.11 (13.0	278.90 (13.5	357.81 (13.5
953.14 (14.1	219.90 (14.1	280.88 (13.7	358.85 (13.0
955.07 (14.1	220.89 (14.1		
956.05 (14.4	222.19 (13.7	282.06 (14.1	359.80 (12.8
958.03 (14.4	223.13 (13.8	283.10 15.0	361.79 (13.6
959.0 14.5	224.17 (14.1	284.0 14.6	364.92 14.7
960.0 (14.1	227.17 15.0	284.06 (14.1	366.80 13.7
964.0 14.8	228.13 (14.1	284.99 13.0	367.80 13.8
964.11 (14.1	228.94 (14.1	285.21 13.5	367.84 13.5
966.01 (14.1	229.14 13.7	286.07 13.5	367.92 (13.1
968.00 (14.1	229.90 13.6	292.15 (13.6	368.78 (13.5
968.00 (14.1	229.92 13.8	292.85 (13.5	369.79 (13.7
968.0 15.0	229.96 13.3	293.97 (13.0	370.80 (13.1
	230.06 12.6	296.87 (12.6	372.85 (13.1
969.00 (13.6	230.17 13.4	299.0 14.3	374.81 (13.1
985.97 13.1	230.90 13.5	301.85 (13.6	375.82 (13.1
986.98 13.0	230.95 13.3	304.90 (13.5	378.78 (13.2
988.0 13.5	231.07 13.7	306.92 (13.0	379.80 (13.0
990.04 13.7	231.17 13.5	307.94 (14.1	380.84 (12.6
990.99 13.6	232.15 13.6	308.85 (13.8	381.81 (13.1
991.96 13.9	233.22 (13.6	309.92 15.2	382.92 14.1
994.9 14.6	234.30 14.0	310.84 (14.1	383.79 (13.0
994.96 14.1	235.08 (13.0	311.86 (13.5	384.78 (13.2
995.97 14.1	236.13 (12.5	313.12 (13.6	386.79 (13.0
	238.10 (12.1	314.89 (13.5	387.78 (13.0
		316.97 (12.1	388.80 (12.8
		7	389.78 (12.8

TABLE 2 (cont).

<u>BV Pup.</u> 074423	<u>BV Pup.</u> 074423	<u>BV Pup.</u> 074423	<u>BX Pup.</u> 075024
2444000+	2444000+	2444000+	2443000+
395.78 (13.0	666.85 (14.1	779.80 (13.0	810.26 14.0
397.80 (13.1	667.90 (13.5	786.77 (14.1	811.81 13.6
398.79 (13.2	668.97 14.8	872.18 (14.1	866.05 (14.2
400.79 (13.0	673.91 (13.0	878.12 (12.8	867.12 (14.2
402.80 (13.2	677.85 (13.5	912.30 (14.1	868.10 (14.2
403.77 (13.2	678.89 (13.0	929.04 (13.4	870.09 (14.2
404.80 (13.1	691.83 (14.1	932.25 14.1	871.11 14.2
405.77 (13.0	692.82 (13.6	933.97 (14.1	872.19 13.8
406.78 (13.0	693.98 14.2	935.03 (14.1	873.15 14.2
407.76 (13.0	694.83 (13.5	937.22 13.4	877.18 (14.2
	695.84 (13.5		
408.79 (13.0	696.84 (13.5	938.24 13.4	878.16 (14.2
411.9 13.6	698.82 (13.5	939.19 13.6	882.27 (14.2
418.79 (12.8	699.81 (13.6	941.14 (14.1	886.08 (14.2
423.78 (13.0	702.81 (13.7	941.25 13.9	891.08 (14.2
489.23 (13.1	703.96 13.7	942.09 (14.1	893.10 (14.5
496.23 (13.1	704.81 (13.5	942.24 14.1	894.07 (14.2
502.21 (13.1	706.94 13.8	942.97 (14.1	895.07 (14.5
504.20 (13.1	710.80 (13.6	945.25 (14.1	898.16 (15.5
504.20 13.5?	712.84 (13.0	953.96 (14.4	899.05 14.3
518.20 (14.4	716.85 (13.6	956.00 (14.4	900.04 14.0
524.20 (13.1		957.17 (14.1	901.05 14.0
			901.11 13.9
545.14 (13.1	717.92 (12.8	958.92 (14.1	902.08 14.3
570.02 14.0	719.79 (13.6	960.95 (14.1	903.04 13.9
577.21 14.1	721.81 (13.8	964.00 (14.1	904.06 14.4
580.24 (13.7	722.90 (13.5	965.12 13.8	907.05 (15.5
585.21 13.8	723.83 (13.5	965.93 14.1	908.08 (14.5
588.16 13.9	724.85 (13.5	966.19 14.0	909.10 (14.2
600.02 13.2	725.82 (13.6	968.94 (14.1	910.08 (14.2
603.02 13.2	726.78 (13.8	970.92 (14.1	912.93 (15.0
610.91 (13.8	727.80 (12.1	971.21 14.0	917.16 (14.5
612.91 (14.1			
	728.89 13.2		923.04 (14.2
614.99 (13.1	728.9 13.9		926.03 14.3
628.05 (13.0	732.3 14.2		927.10 13.7
628.92 (13.0	734.79 (13.8		928.01 13.7
629.92 (14.1	736.91 14.9		930.95 15.7
630.96 (14.1	745.78 (13.8		933.03 14.3
631.92 (13.5	746.82 (14.1		934.03 (14.6
632.89 (13.1	747.81 (13.8		935.08 (14.6
634.10 14.6	748.87 (14.1		936.18 (14.2
635.88 (13.7	749.85 (14.1		937.09 (14.2
637.87 (13.5	750.78 (13.4		938.0 (16.0
637.92 13.0?	751.78 (13.4		939.07 (14.2
638.88 (13.2	752.88 (14.1		941.14 13.8
639.91 13.0?	753.77 (13.5		949.00 13.6
644.87 (13.5	753.80 13.8		951.01 13.7
648.2 14.0	754.80 13.0		955.08 (14.0
651.85 (13.0	760.81 (14.1		959.0 (15.5
656.85 (13.5	762.80 (13.3		960.25 (13.0
657.84 (13.5	763.79 (13.5		964.11 (14.2
659.85 (13.7	764.81 (13.0		966.02 (14.2
660.88 (13.7	766.79 (13.2		967.00 (14.2
660.9 13.8	775.78 (13.0		968.0 (16.0
662.92 (13.8	778.80 (14.1		

TABLE 2 (cont)

BX Pup. 075024	BX Pup. 075024	BX Pup. 075024	BX Pup. 075024
2443000+	2444000+	2444000+	2444000+
969.00 (14.2	263.89 (14.1	367.80 (13.7	666.86 (14.1
985.97 14.2	264.0 (15.0	368.85 (14.2	667.90 (13.5
986.99 (14.2	271.88 (13.0	369.79 (13.7	668.97 15.0
988.0 (16.0	272.93 (13.0	378.78 (13.2	673.91 (13.0
990.04 (14.2	274.87 (13.9	379.80 (13.0	677.85 (13.5
990.99 (14.5	275.95 (14.0	381.79 (13.0	692.82 (13.6
991.96 (14.5	278.90 (13.0	382.92 15.0	693.98 15.0
994.9 (16.0	279.94 (14.1	383.79 (13.0	694.84 (13.5
995.97 (14.2	280.88 (13.8	384.78 (13.2	695.84 (13.5
		386.79 (13.0	696.84 (13.5
2444000+	281.87 (13.5	387.78 (13.0	698.82 (13.5
	284.0 15.7	395.79 (13.0	699.86 (13.6
008.9 14.2	285.06 (14.0	398.77 (13.2	702.81 (13.7
010.97 13.8	286.25 14.3	400.79 (13.0	703.98 14.7
011.96 14.2	292.86 (13.5	402.80 (13.2	704.82 (13.5
012.9 14.2	293.86 (13.0	403.77 (13.2	706.94 14.6
018.95 (14.2	301.85 (13.6	405.77 (13.0	710.80 (13.6
019.81 (14.1	304.90 (13.5	406.78 (13.0	712.84 (13.0
021.98 (14.2	306.84 (13.8	407.76 (13.0	716.85 (13.6
023.82 (14.0	307.89 (13.0	408.80 (13.0	717.92 (13.0
023.96 13.9	308.85 (13.8		
027.80 (13.6	310.85 (14.1	411.9 (15.0	719.79 (13.6
167.2 15.7	311.86 (13.5	423.79 (13.0	721.81 (13.8
173.26 (13.9	314.89 (13.5	570.02 (16.0	722.90 (13.5
193.26 (14.0	317.91 (13.6	577.22 15.4	723.83 (13.5
199.07 (13.5	319.86 (13.5	580.24 (14.0	724.85 (13.5
202.19 (14.0	320.89 (13.8	585.22 14.0	725.82 (13.6
219.90 (13.3	322.89 (13.0	588.17 15.4	726.78 (13.8
220.89 (13.3	324.86 (13.5	605.91 (13.0	728.9 15.7
222.19 (13.8	325.83 (13.4	609.14 (13.8	734.80 (13.8
223.14 (14.0	327.82 (13.0	610.17 (14.0	736.92 (14.5
		611.15 (14.0	746.82 (14.2
224.16 (14.0	330.90 (12.8	612.91 14.1	747.81 (13.8
226.94 (13.6	333.86 (13.0	615.11 (14.0	748.87 (14.2
227.16 (15.0	336.86 (13.0	618.24 (14.1	749.85 (14.2
228.12 (14.0	338.97 14.0	619.85 (14.0	750.79 (13.4
229.13 14.0	339.80 (13.5	628.08 (13.0	751.78 (13.4
229.91 13.2	340.96 14.3	629.92 (14.1	752.84 (14.0
229.93 (14.5?	341.80 (13.4	630.96 (14.1	753.81 (14.2
230.06 14.2	342.79 (13.0	631.92 (13.8	754.80 (14.2
230.16 14.0	344.80 (13.6	632.89 (14.1	760.81 (14.2
230.90 13.9	345.93 (15.7	633.92 (13.8	762.80 (13.3
231.08 13.4?	346.86 (13.3	634.09 15.4	763.79 (13.5
231.16 14.3	348.86 (13.5	636.07 (13.8	764.81 (14.0
232.15 (14.0	350.96 14.2	637.92 (13.8	766.79 (13.2
233.22 (14.0	352.79 (13.0	638.88 (13.5	775.78 (13.0
247.01 (13.0	353.83 (13.4	641.12 (15.0	778.80 (14.0
250.15 (14.0	354.89 (13.2	644.87 (13.5	779.81 (14.2
250.89 (13.7	357.81 (13.5	651.85 (13.0	786.78 (14.0
252.14 (14.0	358.85 (13.0	656.85 (13.5	~~789.88 (14.0)~~
253.89 (13.5	361.79 (13.6	657.84 (13.5	872.18 (14.0
255.13 (15.4	362.50 (13.0	659.85 (13.7	812.20 (13.8
255.91 (13.5	364.92 14.2	661.0 14.2	932.25 (13.8
260.93 (13.5	366.80 (13.7	662.92 (13.5	933.97 (14.0

TABLE 2 (cont).

BX Pup. 075024	BB Vel. 083347	BB Vel. 083347	BB Vel. 083347
2444000+	2443000+	2443000+	2443000+
935.03 (14.0)	173.1 15.3	298.76 (13.7)	553.02 (13.7)
937.22 (13.8)	174.03 (13.5)	299.96 (13.4)	555.13 (13.7)
938.23 (13.8)	174.98 (13.5)	304.89 (13.7)	557.02 (13.7)
941.25 (13.8)	175.97 (13.5)	307.81 (13.7)	557.92 (13.7)
942.25 (13.8)	176.96 (13.57)	308.76 (13.7)	558.91 (13.7)
942.97 (13.8)	177.99 (13.5)	309.86 (13.7)	559.91 (13.7)
945.25 (13.8)	180.96 (13.7)	310.90 (13.7)	560.87 (13.7)
953.97 (14.0)	181.97 (13.7)	316.76 (13.7)	565.86 (13.7)
956.00 (14.0)	182.99 14.0?	326.76 (13.7)	567.85 (13.6)
957.17 (13.8)	183.95 (13.5)	329.78 (13.7)	568.94 (13.6)
958.92 (14.0)	184.00 (13.7)	331.77 (13.7)	569.87 (13.7)
961.02 (14.0)	184.96 14.0?	333.77 (13.7)	570.95 (13.7)
964.00 (14.0)	185.94 (13.7)	339.92 (13.5)	573.? (13.5)
965.12 (14.0)	188.89 (13.7)	431.2 915.0	575.04 (13.7)
965.93 (14.0)	189.98 (13.7)	480.90 (13.4)	576.89 (13.7)
966.19 13.8	190.98 (13.7)	481.89 (13.7)	577.? (13.5)
968.94 (14.0)	191.87 (13.7)	483.00 (13.7)	578.91 (13.7)
970.93 (14.0)	193.95 (13.7)	486.99 (13.7)	579.85 (13.7)
971.20 (15.4)	197.92 (13.7)	488.16 (13.6)	581.83 (13.7)
BB Vel. 083347	199.88 (13.7)	489.90 (13.6)	582.86 (13.7)
2442000+	203.97 (13.7)	494.01 (13.4)	583.83 (13.7)
810.02 15.0	204.93 (13.7)	499.0 914.5	587.92 (13.5)
811.? (14.5)	205.95 (13.7)	504.91 (13.7)	588.83 (13.5)
819.00 14.9	209.85 (13.7)	505.91 (13.7)	589.84 (13.5)
819.93 (13.8)	210.93 (13.7)	506.96 (13.7)	590.81 (13.5)
835.? (13.9)	211.84 (13.7)	512.10 (13.4)	593.81 (13.7)
839.93 15.0	212.91 (13.5)	516.04 (13.4)	595.? (13.5)
844.? (13.5)	214.01 (13.7)	517.98 (13.7)	597.84 (13.7)
855.? (13.5)	216.92 (13.7)	518.90 (13.4)	599.84 (13.4)
860.? (13.5)	217.93 (13.7)	520.90 (13.4)	602.95 (13.7)
861.? (13.5)	219.05 (13.7)	521.94 (13.6)	604.80 (13.7)
870.? (13.5)	219.83 (13.7)	523.90 (13.7)	604.0 15.0
901.? (13.5)	220.92 (13.5)	526.13 (13.4)	604.91 (13.7)
	221.85 (13.7)	526.99 (13.4)	605.95 (13.5)
	222.94 (13.7)	528.12 (13.4)	608.08 (13.7)
2443000+	223.93 (13.7)	535.89 (13.4)	610.82 (13.7)
078.? (13.5)	224.91 (13.5)	536.91 (13.4)	611.80 (13.7)
079.? (13.5)	225.94 (13.4)	537.90 (13.4)	613.91 (13.4)
097.? (14.0)	226.0 915.5	539.96 (13.7)	615.80 (13.7)
126.05 (13.7)	227.02 (13.7)	540.97 (13.7)	616.80 (13.4)
127.01 (13.7)	229.95 (13.7)	542.06 (13.7)	622.79 (13.4)
131.99 (13.7)	230.86 (13.7)	542.90 (13.7)	624.79 (13.7)
138.99 (14.0)	244.94 (13.7)	544.98 (13.7)	625.90 (13.7)
140.04 (13.5)	251.88 (13.7)	546.03 (13.7)	626.9 15.3
144.06 (13.5)	253.83 (13.7)	547.00 (14.4)	627.82 (13.5)
150.05 (13.5)	255.80 (13.7)	548.04 (14.4)	628.87 (13.4)
152.05 (13.5)	256.86 (13.7)	548.90 (13.7)	629.79 (13.5)
155.99 (13.5)	258.96 (13.7)	549.87 (13.7)	630.82 (13.7)
160.98 (13.7)	260.90 (13.4)	550.97 (13.7)	631.78 (13.4)
161.99 (13.5)	272.89 (13.4)	552.0 15.7	633.04 (13.7)
165.99 (13.4)	276.81 (13.7)		633.83 (13.7)
168.96 (13.5)	277.95 (13.7)		634.92 (13.7)
169.90 (13.7)	278.81 (13.7)		638.04 (13.7)
170.97 (13.4)	279.92 (13.5)		639.02 (13.7)
171.96 (13.5)	283.9 (15.0)		640.07 (13.7)

TABLE 2 (cont).

BB Vel. 083347	BB Vel. 083347	BB Vel. 083347	BB Vel. 083347
2443000+	2443000+	2443000+	2444000+
641.77 (13.7)	878.91 (14.0)	956.10 (13.7)	027.88 (13.7)
642.93 (13.7)	879.89 (13.7)	956.93 (13.4)	028.79 (13.5)
644.81 (13.7)	880.89 (13.7)	958.02 (13.7)	029.78 (13.4)
645.85 (13.7)	882.25 (14.5)	958.82 (13.7)	033.78 (13.4)
647.80 (13.4)	882.96 (14.0)	960.00 (13.7)	038.97 (14.5)
656.78 (13.7)	883.89 (13.7)	960.82 (13.7)	041.87 (13.5)
657.79 (13.7)	884.88 (13.5)	962.98 (15.3)	042.95 (14.2)
658.80 (13.7)	890.07 (14.0)	964.11 (15.3)	043.84 (13.4)
661.82 (13.7)	890.89 (13.7)	966.03 (14.0)	049.86 (13.7)
662.79 (13.4)	892.16 (14.1)	966.92 (13.7)	050.80 (13.4)
665.04 (13.7)	893.93 (14.5)	968.01 (14.0)	051.82 (13.5)
665.97 (13.7)	895.06 (14.0)	969.01 (13.7)	056.90 (13.7)
668.98 (13.7)	895.94 (13.7)	970.15 (13.7)	057.77 (13.5)
669.79 (13.4)	896.94 (14.0)	979.88 (14.0)	066.85 (13.7)
672.79 (13.4)	897.90 (13.5)	980.87 (13.7)	067.77 (13.5)
682.78 (13.7)	898.15 (14.5)	981.89 (13.7)	069.78 (13.4)
684.89 (13.7)	899.23 (13.5)	982.88 (13.9)	073.77 (13.4)
685.82 (13.7)	900.06 (14.0)	985.07 (14.0)	074.79 (13.4)
686.82 (13.7)	901.06 14.5?	986.82 (13.9)	078.89 (13.7)
687.81 (13.7)	901.07 (13.7)	987.01 (14.2)	080.78 (13.4)
688.81 (13.7)	901.88 (13.7)	987.93 (13.7)	083.78 (13.0)
690.02 (13.4)	902.08 (14.4)	988.83 (13.6)	117.37 (14.7)
692.78 (13.7)	903.05 (14.0)	990.05 (14.2)	135.22 12.7?
694.83 (13.7)	904.07 (14.0)	991.02 (14.2)	136.21 (12.2)
698.97 (13.7)	905.92 (13.5)	997.91 (14.4)	139.37 (13.7)
703.90 (13.4)	906.90 (13.9)	992.90 (13.5)	141.21 12.7?
714.78 (13.7)	908.16 15.5	993.79 (13.0)	142.20 12.7?
734.37 (13.7)	909.10 (13.7)	995.05 (14.4)	144.20 (12.2)
806.16 (13.6)	910.11 (13.7)	996.0 15.4	173.39 (14.0)
810.14 (13.5)	919.93 (13.7)	996.80 (13.6)	180.01 (13.0)
810.27 (14.5)	923.05 (13.7)		190.07 (13.7)
811.32 (14.5)	924.86 (13.5)	2444000+	193.27 (14.0)
831.12 (13.7)	925.86 (13.5)	000.04 (13.4)	194.07 (13.7)
848.12 (15.3)	927.96 (13.7)	005.95 (13.4)	195.10 (13.4)
860.93 (13.4)	930.97 (13.7)	007.96 13.8	199.07 (13.7)
861.90 (13.7)	931.98 16.0	008.92 (13.7)	201.16 (13.5)
863.97 (13.4)	933.05 (14.5)	009.02 13.8	202.23 (14.0)
864.89 (13.7)	934.05 (13.7)	010.98 14.1	204.02 (13.4)
866.97 (13.4)	935.08 (13.7)	011.02 14.2	208.30 (14.0)
867.13 (14.2)	936.11 15.5		210.08 (13.4)
868.11 (14.2)		011.97 14.4	
870.09 (14.4)	937.09 (13.7)	013.88 (13.4)	215.95 (13.5)
871.10 (14.2)	937.88 (13.9)	015.80 (13.5)	217.00 (13.7)
872.01 (13.4)	938.92 (13.7)	017.84 (13.5)	220.21 (14.0)
872.21 14.6	940.87 (13.7)	017.95 (13.7)	220.90 (13.7)
872.89 (13.7)	949.01 (14.0)	018.77 (13.4)	222.15 (14.0)
873.95 (13.7)	951.03 (14.5)	018.96 (14.2)	223.16 (14.0)
874.90 (13.4)	951.92 (13.7)	019.78 (13.7)	224.14 (14.0)
875.90 (13.7)	953.00 15.7	020.79 (13.7)	224.89 (13.5)
877.0 (15.3)	953.15 (13.7)	021.91 (13.7)	227.21 (15.3)
878.17 (14.2)	953.90 13.6	023.98 (14.2)	228.14 (14.0)
	955.08 (13.7)	024.96 (13.7)	229.17 (15.3)
			230.14 (14.0)

TABLE 2 (cont).

BB Vel. 083347	BB Vel. 083347	BB Vel. 083347	BB Vel. 083347
2444000+	2444000+	2444000+	2444000+
231.16 (14.0)	307.93 (13.9)	367.81 (13.9)	582.96 (13.7)
232.17 (13.7)	308.85 (13.7)		484.26 15.5
233.21 (14.0)	310.84 (13.9)	368.78 (13.9)	587.99 14.9
234.23 (14.2)	311.85 (13.7)	369.07 (14.0)	588.22 15.4
235.07 (13.4)	313.10 (14.0)	370.06 (14.2)	589.27 (14.2)
236.31 (14.2)	313.91 (13.4)	371.01 (14.5)	591.28 (14.0)
238.11 (13.4)	314.88 (13.7)	372.96 (13.5)	596.94 (13.7)
241.88 (13.6)	317.94 (13.5)	376.90 (13.4)	598.97 (13.7)
243.87 (13.0)	318.94 (13.7)	377.88 15.1	601.14 (13.7)
245.09 (13.7)	320.10 (13.7)	378.79 (13.6)	604.03 (15.3)
245.91 (13.7)	320.15 (13.4)	379.81 (13.4)	605.01 (15.3)
246.96 (13.7)	320.84 13.5	380.85 (13.4)	606.00 (13.7)
247.96 (14.0)	320.99 13.8	381.80 (13.0)	607.25 (14.0)
249.14 (14.0)	320.94 13.4	382.89 (13.7)	607.90 (13.5)
250.12 (14.0)	322.87 13.2	383.78 (13.4)	609.15 (14.0)
251.14 (14.0)	322.90 13.7	384.78 (13.6)	610.21 (14.0)
252.14 (14.0)	322.97 13.3	386.79 (13.0)	611.17 (14.0)
252.90 (13.7)	324.82 13.4	387.79 (13.4)	612.19 (14.0)
253.89 (13.7)	324.82 13.4	388.81 (13.0)	612.98 (13.7)
255.17 15.7	324.85 13.4	389.79 (13.2)	614.21 (13.7)
	325.83 13.4	392.89 (13.7)	615.13 (14.0)
256.15 (14.0)			
257.13 (14.0)	325.85 13.4	395.79 (13.6)	618.20 (14.0)
258.12 (14.0)	327.82 (12.9)	396.90 (13.7)	619.23 (14.0)
261.1 (15.0)	327.83 (13.4)	397.86 (13.7)	625.87 (13.2)
261.90 (13.5)	327.93 (13.4)	398.77 (13.6)	627.94 (13.7)
263.19 (15.3)	329.93 (13.4)	399.80 (13.0)	627.94 13.7
263.88 (13.7)	330.90 (12.6)	400.79 (13.6)	627.88 ((13.4
265.30 15.3	332.98 (14.0)	402.80 (13.4)	627.91 13.8
272.09 (13.4)	333.89 (13.5)	403.77 (13.4)	628.00 13.5
273.03 (13.4)	335.04 (13.7)	404.98 (13.7)	628.94 13.9
274.04 (14.0)	336.05 (14.0)	407.77 (13.6)	628.97 13.5
275.06 (14.0)	337.04 15.1	408.90 (13.7)	629.90 13.5
275.94 (13.9)	338.07 (14.0)	409.85 (13.0)	629.91 13.2
277.06 (13.7)	338.87 15.3	418.80 (13.4)	629.97 (13.6)
278.10 (14.0)	340.06 (14.0)	421.78 (13.6)	629.98 13.6
278.86 (13.7)	341.12 (14.0)	422.86 (13.4)	630.89 13.5
279.94 (14.0)	341.81 (13.9)	423.89 (13.7)	630.95 13.7
281.0 15.2	342.93 (13.7)	424.78 (13.4)	630.99 13.6
282.07 (14.0)	344.10 (13.7)	425.80 (13.4)	631.89 13.6
283.12 15.3	344.94 (13.5)	428.79 (13.4)	631.90 13.6
284.07 (14.0)	345.95 (13.5)	436.89 (13.4)	631.91 13.5
285.0 15.7	346.79 (13.6)	437.78 (13.4)	631.92 (13.6)
286.10 (14.0)	348.86 (13.9)	444.80 (13.4)	632.00 13.7
288.96 (13.7)	350.98 15.5	450.79 (13.0)	632.88 13.7
289.94 (13.5)	351.95 (13.4)	494.18 (13.4)	632.89 13.9
292.14 (13.7)	352.82 (13.4)	502.20 (13.4)	633.87 13.8
293.19 (13.7)	353.83 (13.4)	503.19 (13.4)	633.88 13.5
293.86 (13.7)	354.89 (13.6)	524.34 (14.2)	633.95 (13.7)
296.87 (13.0)	356.90 (13.0)	575.18 (13.7)	633.98 (13.5)
301.85 (13.6)	358.85 (13.4)	577.25 15.5	634.15 13.8
304.89 (14.0)	359.80 (13.4)	578.03 15.2	635.00 14.0
305.90 (13.7)	363.78 (13.5)	580.21 (14.0)	635.15 (13.7)
307.05 (13.7)	366.80 (13.7)	582.16 (14.2)	635.88 (13.5)
			635.89 (13.4)

TABLE 2 (cont)

BB Vel. 083347	BB Vel. 083347	BB Vel. 083347
2444000+	2444000+	2444000+
636.09 14.5	723.83 (13.4	816.78 (13.0
637.93 (13.7	724.85 (13.7	853.23 (13.4
638.85 (13.5	725.90 (13.6	857.22 (13.4
641.11 (14.7	726.91 (13.7	858.21 (13.4
641.91 (13.5	730.03 (13.7	872.21 (13.1
644.91 (13.7	732.3 '13.4	874.20 (13.4
646.08 (14.7	734.09 (13.7	876.21 (13.1
646.99 (13.7	734.79 (13.7	878.13 (13.4
647.94 (13.7	737.90 15.4	881.15 (13.4
649.00 (13.4	745.79 (13.5	885.16 (13.4
651.87 (13.4	746.84 14.0?	887.18 (13.4
656.85 (13.5	747.81 (13.9	899.29 (14.0
657.91 (13.7	747.96 (13.7	901.25 (14.0
659.86 (13.7	748.77 (13.4	904.15 (13.4
660.94 (15.3	748.89 14.0	906.27 (13.4
662.06 (13.7	749.85 14.0	908.29 (13.7
662.88 (13.6	750.79 (13.6	911.15 (13.4
665.01 (13.7	751.79 (13.5	912.27 (14.0
666.84 (13.7	752.3 (13.5	914.15 (13.4
667.90 (13.6	752.78 (13.6	929.04 (13.4
668.99 (13.6	752.90 (13.7	932.23 (14.0
669.93 (13.7	753.77 (13.6	935.24 (13.7
671.05 (14.0	753.82 14.0?	937.24 (14.1
672.93 (13.7	754.81 (13.7	938.22 (14.1
674.15 (13.7	754.95 (13.7	940.0 16.0
675.99 15.8	755.84 (13.5	941.25 (14.1
677.16 (13.7	758.3 (13.5	942.23 (14.0
677.84 (13.2	760.82 (13.7	942.99 (13.4
678.88 (13.2	762.79 (13.6	945.24 (14.0
687.94 (13.5	763.91 (13.7	950.16 (13.0
690.93 (13.6	764.85 (13.7	956.02 (13.7
691.85 (14.0	765.84 (13.0	957.16 (14.0
693.05 (14.0	766.91 (13.6	958.98 14.3?
694.81 (13.5	775.82 (13.7	959.00 (13.5
695.93 (13.6	776.75 (13.7	960.10 (13.0
696.84 (13.6	778.3 (13.5	960.99 (13.6
699.00 (14.0	778.78)13.4	964.20 (14.0
699.81 (13.6	779.82 (13.7	965.24 (13.7
701.96 (13.7	780.79 (13.5	965.93 (13.7
703.13 (13.7	783.89 (13.7	966.22 15.5
703.90 (13.6	784.83 (13.4	968.99 (13.7
704.82 (13.4	785.83 (13.6	970.91 (13.7
710.80 (13.4	786.79 (13.8	971.23 15.3
711.82 (13.4	789.80 (13.6	
712.84 (13.4	791.91 (13.5	
716.0 (14.5	796.81 (13.4	
716.86 (13.6	797.77 (13.4	
717.92 (13.7	798.79 (13.4	
719.04 (13.7	805.79 (13.6	
719.80 (13.6	806.79 (13.2	
721.81 (13.9	908.79 (13.4	
722.89 (13.6	809.81 (13.6	

A NOTE ON TY VELORUM

Mati Morel
Variable Star Section, R.A.S.N.Z.

SUMMARY: An identification chart, and list of comparison stars, is presented for the star TY Velorum. An examination of astrographic plates at Sydney Observatory has revealed no evidence of variability, as reported by Wood (1). TY Velorum appears to be constant at $11^m.5^p$.

.....

INTRODUCTION.

Wood (1) reported a star at (1875): $09^h 14^m.4 -54^{\circ} 05'$ which showed the following magnitude variations on Sydney astrographic plates.

1895 Apr. 1	9.55
1897 Jan. 6	9.6
1907 Feb. 14	$11\frac{1}{2}$

The star was subsequently named TY Vel. Later, other observers studied TY Vel, finding it to be:-

- (a) Constant, according to C. Hoffmeister in MVS 14 (1942) and KVBB 27.
- (b) variable?, of very small range, magnitude 9.5 ± 0.08 , according to C. Gaposchkin in H.A. 115 No. 6, p. 102.

No identification chart has been published for TY Vel, apparently, nor is a spectral type available.

OBSERVATIONS.

There are three stars close (within 30 arc secs.) to the published coordinates of TY Vel. The brightest of these is No. 899 on plate 154rh, 1900 Feb. 19, in the Sydney Astrographic Catalogue. Its position is:-

(1875) $09^h 14^m 26^s -54^{\circ} 04.7'$

Its published image diameter is equivalent to a photographic magnitude of 11.4. Sydney 899 appeared to be identical with TY Vel, but some uncertainty remained.

F.M. Bateson kindly arranged to have plates taken in two colours of the region of TY Vel at Mt. John University Observatory. These plates showed that the brightest star has the colour indicative of spectral type B5. The other two are red. The visual magnitudes were estimated to be 12.0, 12.4 with the third slightly fainter (2). I have prepared a finder chart (Fig. 1) by combined plot of COU, CPD and Sydney A.G. A list of comparison stars, most of which have V magnitudes taken from the UBV Catalogue by Nicolet (3), was used to make estimates of Sydney 899 = TY Vel on 1978 Dec. 31 and 1981 March 1, 3 & 6. (Table 1).

Nicholas R. Lomb, Sydney Observatory, kindly agreed to reexamine Wood's plates, plus some others, to check the identity of TY Vel, and to determine whether any of the stars near TY Vel have varied significantly.

RESULTS.

My visual observations of TY Vel are all in close agreement, yielding a mean magnitude of 11.3^v .

N.R. Lomb looked at TY Vel on seven astrographic plates and these were taken on the following dates:-

1895 Apr. 1; 1897 Jan. 6; 1900 March 5; 1901 March 24;
1907 Feb. 14; 1907 Apr. 7; 1907 Apr. 9.

The first two of these were used by wood, and the position of the star is still marked. The plate taken on Feb. 14, 1907, was also used by wood, but TY Vel is within 1 cm of the edge of the edge of the plate, where this plate is now severely faded, rendering the plate useless. On the plate taken on Apr. 1, 1895, TY Vel is also within 1 cm of the edge of the plate.

Using the six good plates, the brightness of TY Vel was compared with neighbouring stars. To an accuracy of 0.5 magnitude NO variation can be seen. A more recent plate of the region, taken on 1967 Feb. 15, was also studied. The relative brightnesses of TY Vel, and those of its neighbours which are brighter than the plate limit, were unchanged from those on the astrographic plates. Using a list of photoelectric B magnitudes supplied by me, N.R. Lomb estimated the brightness of TY Vel on the last plate as

$$11.6 \pm 0.4.$$

The Sydney plates show quite clearly that Sydney 899 = TY Vel.

CONCLUSION.

Examination of Sydney astrographic plates shows no evidence of variability of TY Vel or of any stars in the near vicinity. There is no obvious explanation as to why TY Vel was reported 9^m.55 (1895 Apr. 1) and 9.6 (1897 Jan. 6). The plate records show that these figures are incorrect, with TY Vel appearing then, and at all later epochs, at about 11.5p. Lomb suggests that wood used erroneous magnitudes on his comparison stars.

ACKNOWLEDGEMENTS.

I am indebted to Frank M. Bateson, Director, Variable Star Section, R.A.S.N.Z., for supplying helpful information and observations of TY Vel. I am also indebted to Nicholas R. Lomb, Assistant Astronomer at Sydney Observatory, for kindly examining the plate records.

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- (3) Nicolet, B. 1978. Astron. & Astrophys. Suppl. 34, 1.
- (4) Lomb, N.R. 1981. Private communication.

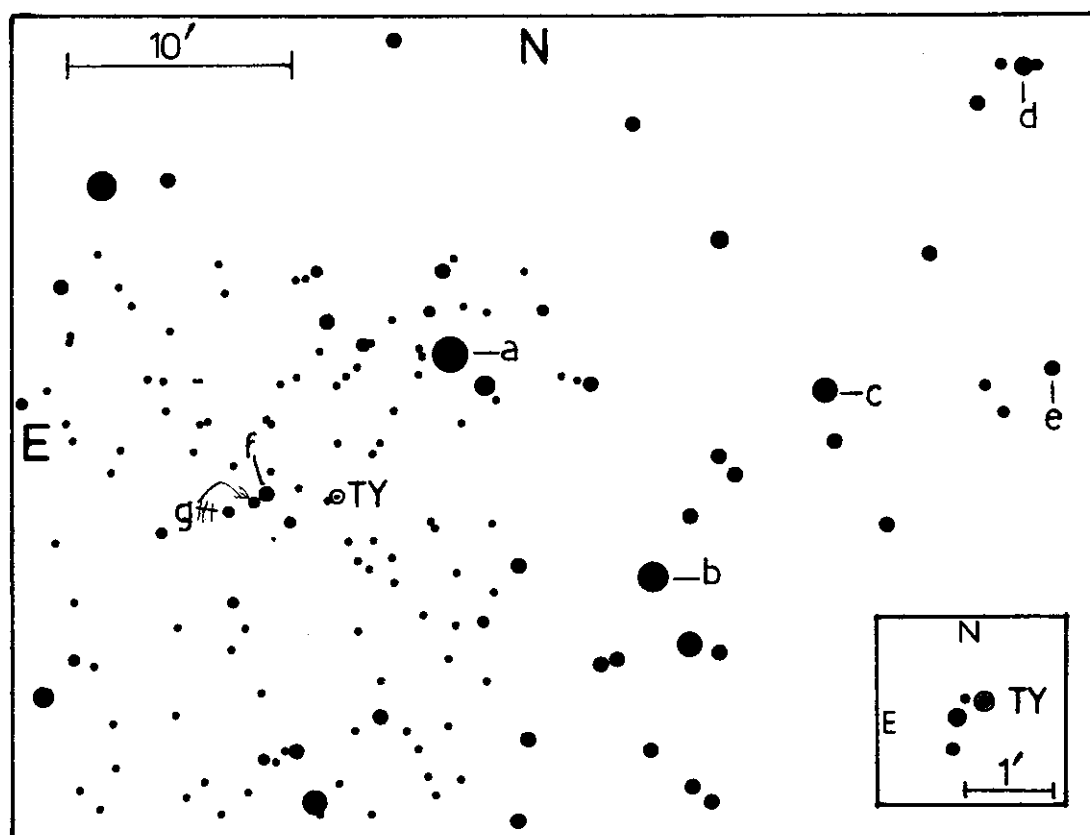


Fig.1. Finder chart for TY Velorum and comparison stars.

TABLE 1.

COMPARISON STARS IN THE FIELD OF TY VELORUM.

<u>CHART LETTER.</u>	<u>HD/HDE.</u>	<u>CoD</u>	<u>V</u>	<u>B-V</u>	<u>REMARKS</u>
a	80435		6.33	+1.41	
b	80268		7.93	+0.01	
c	80125		8.81	-0.04	
d	299927		9.48	+0.14	
e	299931		10.52	+1.08	
f	~~299967~~	-54° 2710			Eye estimate m_v 10.7
g		-54 2713			Eye estimate m_v 11.2

REPORT OF SECTION FOR YEAR ENDED 1981 SEPTEMBER 30.

OBSERVATIONS. The following visual observations up to 1981 August 31 have been received since the last report.

<u>OBSERVER</u>	<u>No. of</u> <u>OBS.</u>	<u>STARS</u>	<u>OBSERVER</u>	<u>No. of</u> <u>OBS.</u>	<u>STARS.</u>
ADCOCK, B.	38	8	LOADER, B.	66	10
BALDWIN, A.	105	17	LUMLEY, E.	58	19
BEGG, D.	59	10	MAKINO, B.	2403	111
BLANE, D.	86*	13	MASSEY, A.	1	1
BODENSTEIN, J.	31*	10	MENZIES, B.	1129	43
BROWN, N.	722	64	MURRAY, A.	142	31
BRYANT, K.	64	9	MOREL, M.	23	8
BURKE, P.	10	1	MCDONALD, D.	75	13
CAMPOS, J.	145*	45	MCDONALD, D.S.	55	19
CRAGG, T.	1264*	414	MCDONALD, G.	388	36
CRISP, R.	97	19	O'KANE, J.	30	12
DODSON, A.	218	60	ORCHISTON, W.	1	1
EMMERSON, R.	195	12	OVERBEEK, D.	4409*	276
FISHER, D.	2225	99	PARK, J.	196	29
FLEET, R.	610*	52	PAGANO, L.	10	10
GILLER, R.	368	50	PROSSER, G.	37*	31
GOLTZ, W.	188	94	ROME, G.	676	56
HARRIES-HARRIS, E	729	75	SAUNDERS, S.	740	55
HOVELL, S.	1433	278	St. GEORGE, J.	212	5
HAYWARD, G.	7	5	STABENOW, R.	96	10
HENNESSEY, D.	62	13	STEPHANOPOULOS, G	31	16
HERDMAN, G.	848	56	SHINKFIELD, R.	61	18
HERS, J.	340 *	43	TAYLOR, N.	1423	108
HIGGS, N.	37	6	TREGASKIS, B.	338	155
HULL, O.R.	1240	109	THOMSON, R.	79*	12
HULL, O.A.	2	2	TRAYNOR, F.	12	6
JONES, A.	4735	97	TURLE, Mrs. L.	214	6
KENT, (Mrs) K.	35	14	VENIMORE, C.	1102	69
KILBEY, P.	188	23	VILLAN, L.	37	5
KINNUNEN, J.	8	1	VINCENT, J.	181*	37
KINNUNEN, E.	3	1	WALKER, W.	3	1
KOMOROUS, M.	31*	24	WILLIAMS, P.	1395	120.
LESLIE, Mrs. A.	472	13			

* = Results also communicated to A.A.V.S.O.

TOTAL OBSERVATIONS 32,224.

This is an increase of almost ten percent over the previous year. Eleven observers each recorded over a thousand observations. They accounted for nearly 74% of the grand total. The list is again headed by Albert Jones, who has now passed a total of 150,000 observations and on his way to 300,000! Records are made to be broken but it will be a difficult task for any observer to equal Albert's wonderful contribution over so many years. However, no matter whether an observer's total been large or small his efforts are not only appreciated but are extremely useful. As this report indicates the greatest possible use has been made of all observations.

PUBLICATIONS. The following were distributed during the year:-

MONTHLY CIRCULARS--12 issues.

PUBLICATIONS. No. 8 (C80).

CHARTS FOR SOUTHERN VARIABLES, Series 13.

A limited number of copies of E.S.O. preprint No. 161, entitled "An Atlas of Southern and Equatorial Dwarf Novae" by N. Vogt and F.M. Bateson.

Numerous notes on individual variables, and on the work of the Section, appeared in the NEWSLETTER of the R.A.S.N.Z.

Every effort was made to enlarge the space available in the Monthly Circulars for details of special programmes and for general notes of interest. However, the increased number of important variables under observation acted against this except in the summer months when observing is curtailed due to Daylight Summer Time. Increasing the number of pages in the Monthly Circulars is not possible owing to the much heavier printing and postal costs that would be involved. It is hoped to overcome this position by the introduction in 1982 of a Section Newsletter to be sent to active visual observers. The details proposed for this additional publication will be distributed shortly and when the first issue is made members will be invited to submit suggestions for improvements.

Another issue of charts is nearing completion and will be available for distribution early in 1982.

No work has been possible on Publications No. 9 owing to the Director's overseas visits. The backlog in issuing of the PUBLICATIONS will be overcome with two issues in 1982.

The Atlas of Dwarf Novae, referred to above, has been submitted to Astronomy and Astrophysics Supplement Series. If accepted for publication a limited number of reprints will be then available.

There has been a steady number of requests for the Instructional Manual and for back issues of charts.

1981 SANTA CRUZ WORKSHOP ON CATAclysmic VARIABLES AND RELATED OBJECTS.

The Director was fortunate to be invited to attend this Workshop. It was a most stimulating and rewarding experience. The visit to U.S.A. has already been the subject of a full report to those who provided the grants that made the visit possible. What was learnt at the Workshop will have a very beneficial effect on the work of the Section. Suffice it to say here that it was made very clear at this meeting that the visual observations made by our members are highly regarded and make a very valuable addition to our knowledge of these variables. Many requests were made to make additions to our observing lists. The necessary charts are being prepared and will be included in future issues of the chart series.

It was also possible during the Workshop to have many detailed discussions with Janet Mattei, Director, A.A.V.S.O. These enabled us both to enlarge and strengthen even further the close cooperation that had already existed between the two organisations. We both feel that our discussions will have real benefits to both organisations.

CHARTS. I am deeply indebted to M. Morel for his very high standard of accuracy and draughtmanship in the final production of charts. His work has been aided by field sketches or preliminary charts contributed by A.F. Jones, M.V. Jones and B. Sumner. Photographs used for charts were kindly supplied by N. Vogt, R.F. Webbink and A.C. Gilmore, Mt. John University Observatory. Others came from those made for me several years ago by the late G. Van Biesbroeck. It was possible to provide sequences of V magnitudes on many charts thanks to the three colour sequences provided by N. Vogt and R.F. Webbink. The Director, Sydney Observatory, kindly made available data from the Sydney astrographic plates. J.A. Mattei kindly permitted us to copy some of the A.A.V.S.O. charts.

PROGRAMMES. Summarised below are some of the work that has been done during the year. This is by no means all, but I have no desire to make this report too long and boring especially as many of the details have already appeared in either the Monthly Circulars or in the Society's Newsletter.

CATAclysmic VARIABLES. Throughout the year members have consistently monitored all the southern dwarf novae brighter than 14.0 at maximum. The Section took part in several special cooperative programmes in order to provide details of the optical behaviour of many dwarf novae to supplement spectroscopic, X-ray and other observations from satellites. Visual observations are essential for these programmes as they provide the best, and only satisfactory, way of giving prompt notification of outbursts.

We have also provided light curves and detailed lists of the observations of many dwarf novae to many astronomers and to a number of Ph.D. students for their papers.

Our own papers on particular dwarf novae have proved most useful to astronomers since these enable them to select those stars that are likely to repay closer attention with more advanced techniques. That is illustrated by the use made of the results on TY Men which has now been shown to lie within the well known period gap of 2 to 3 hours.

Novae discovered during the year have been well observed, especially Nova CrA 1981. Recurrent novae have been well monitored but no outbursts detected.

SYMBIOTIC VARIABLES. Our observations are being analysed by a computer programme at the University of Illinois.

R CrB VARIABLES. The better known stars of this type--DY Cen; UW Cen; S Aps and RY Sgr--have been closely monitored by most observers. The remaining R CrB stars have also been well observed by a few members and especially by A.F. Jones. Prompt notification has been given in the monthly circulars when stars have faded to a deep minimum. David Kilkenny has used our observations in investigations into the periods of the short term pulsations of these stars. The object of his computer programme is to see whether the pulsation periods over decades decrease with time as theory dictates.

RAPID IRREGULAR VARIABLES. There were many requests for lists of both our published and unpublished observations. Several of these stars have multiple periods which have been investigated, whilst other researches have used the observations for checking on the long term variations.

MIRA VARIABLES. A large number of Mira variables have been kept under observation. Copies of the observations are used by the A.A.V.S.O. in their predictions and light curves. This mutual cooperation permits one centre to be responsible for this data instead of both organisations trying to do the same work.

FUTURE PROGRAMMES. The ever increasing demands for our results has thrown a heavy burden on Headquarters. To maintain all programmes and at the same time get the data published there is now an urgent need for assistance in various forms. The most important observational need is for the determination of sequences of comparison stars in a number of fields. Those with photoelectric photometers can do most useful work in this area.

Assistance with the desk work is required to (a) produce light curves for publication; (b) Typing copies of observations to fill the many requests for data, and (c) preparing and typing data for several computer programmes. Any member who is able and willing to assist with any of these programmes should contact the Director.

ACKNOWLEDGEMENTS. Without observers there would be no Section. It is their consistent and accurate observations that make the observational results so much in demand. Each and every observer is sincerely thanked for his valuable contributions.

I am deeply indebted to our Recorder, Gordon Smith, who is responsible for the maintaining of the permanent records. These reflect his care and attention to detail. Gordon also prepares the lists of observations exchanged with the A.A.V.S.O. and B.A.A.

My thanks are also due to the leaders of the various local groups. They foster interest amongst their members and also see that reports reach me so regularly.

The Section will be much the poorer for the death of John Whelan, of the University of Cambridge, who took a great interest in the Section and was always ready to offer advice and assistance.

The help and encouragement of N. Vogt of the European Southern Observatory has been invaluable.

M. Morel has continued to maintain an extremely high standard in the production of charts. Without his work it would not have been possible to produce the charts. His work has been aided by the preliminary data supplied by a number of members.

I also have to thank J. Faulkner, Lick Observatory, for the opportunity afforded me of attending the 1981 Santa Cruz Workshop.

Finally I have to thank all those who have supported the Section by subscriptions, grants and help in so many forms.

1981 December 31

Frank M. Bateson
Director.